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NEW YORK
ZOOLOGICAL SOCIETY

1895



1953

FIFTY-EIGHTH
ANNUAL REPORT
FOR THE YEAR 1953

NEW YORK ZOOLOGICAL SOCIETY

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30 East 40th Street, New York 16, N. Y.

THE ZOOLOGICAL PARK
Bronx Park, New York 60, N. Y.

MEMBERSHIP IN THE
NEW YORK ZOOLOGICAL SOCIETY

THE NEW YORK ZOOLOGICAL SOCIETY was founded in 1895 for the "instruction and recreation of the people" through the establishment of a Zoological Park, for the promotion of zoology through exhibition of collections, publication, research and exploration, and for the conservation of animal life of the world. Since 1899 the Zoological Society has directed the New York Zoological Park and in 1902 it was entrusted with the management of the New York Aquarium.

Membership is actively invited of all persons who are interested in the objects of the Society and desire to contribute toward its support.

Annual Membership is \$15. Contributing Membership is \$25. These Memberships entitle the holders to Member's cards and 10 guest tickets of admission to the Zoological Park on pay days; a copy of the Annual Report; a subscription to Animal Kingdom, the bi-monthly publication of the Society; privileges of the Library and Members' Lounge in the Administration Building and to attend all open meetings of the Society. Tickets to all sections of the Zoological Park for which an admission charge is made are available, free, to Members upon application at the Administration Building in person. Members will be taken on "behind the scenes" tours of the Zoological Park and Aquarium, without charge, on application, and are entitled to 20% discount on all publications of the Society. We are advised that Contributing Membership fees are deductible from income tax within the legal limits.

Life Membership is \$300. See By-laws for conversion of Annual and Contributing to Life Membership. Other classes of membership are: Patron, \$1,000; Associate Founder, \$2,500; Founder, \$5,000; Founder in Perpetuity, \$10,000; Benefactor, \$25,000.

Applications for membership may be submitted to any officer of the Society or to the Society's general office at 30 East 40th Street, New York 16, N. Y.

FORM OF BEQUEST

I do hereby give and bequeath to the "New York Zoological Society," of the City of New York.
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REPORT OF THE PRESIDENT

Fairfield Osborn

THE PAST YEAR has emphasized, perhaps to a greater degree than previous ones, the variety of activities of our institution. All of the work in which we are presently engaged continues to fall within the purposes for which our institution was originally founded more than half a century ago. Yet, as time goes on, new fields of knowledge are opened up and new courses of action become desirable. Consequently, while the accomplishments of the year have indeed been varied, they are all dedicated to the understanding and protection of animal life and to the public's enjoyment of the wonders of the animal world.

The work of any institution such as ours naturally falls into two major classes, each, however, related to the other. The first represents what may be termed the work of the mind; the second, physical development. Both are essential and there is no need to endeavor to measure their relative importance. In the first class fall the activities of the Society which have to do directly with animal life. It will be observed that the scientific research carried on by our organization reveals great diversity, ranging from the field studies conducted at the Tropical Research Station to behavioristic, physiological or pathological research conducted by the Zoological Park and Aquarium staffs. Similarly, the work of the Society in wildlife protection varies in character from the ecological survey of caribou and moose populations in Alaska to the study of relationships between vegetation and water supply conducted by our affiliate organization, The Conservation Foundation. Nor can we overlook the equally varied activities in the general field of education, ranging from the literary and scientific publications of staff members to guided school tours in the Zoo.

While detailed statements regarding all activities and financial matters are recorded elsewhere in this report, special reference needs to be made here to the following highlights:

Arrangements were completed for the transfer to the Society by its owner, Dr. William Beebe, of the buildings and 200 acres of land comprising the Simla property located in the Arima Valley of Trinidad. This generous act by the dean of our scientific staff insures the long-term continuance of this extremely valuable property for field research in a tropical region.

At the same time the Society divested itself of its direct responsibilities, including financial costs, for the operation of the Jackson Hole Biological Station, through an arrangement with the University of Wyoming, which from now on will take over the station and supervise programs of field research in that region. It should be added that harmonious arrangements have been made with the University for cooperative work there in the future and the Society will continue to appropriate funds for fellowships.

The project aimed at the better protection of fauna in Alaska and carried out jointly with The Conservation Foundation, cul-

minated in the publication, in the late autumn, by the Ronald Press of a book entitled "Wildlife in Alaska." Continuing work is being planned for advancing wildlife conservation measures in that Territory during the coming year.

The program familiarly called our Point IV Program, devoted to extending aid to zoologists in European countries, was carried out for the second and culminating year, with assistance extended to twenty scientific laboratories in nine European countries. The improvement of European economy has removed the pressing need for this program which was so evident when it was initiated three years ago.

It is gratifying to realize that Lee S. Crandall, General Curator Emeritus, is busily engaged on the preparation of volumes which will deal with the care of wild animals in captivity. Although there exists, both in Europe and in this country, a considerable amount of written material on this subject, no adequate series of books, representing a compendium of existing knowledge, has ever been published. Mr. Crandall, through 45 years of experience in the Zoological Park, is ideally equipped for authorship of one or more books on this subject, which will eventually be published under the sponsorship of our institution.

In the class of physical development, the year is especially noteworthy because plans have culminated for the construction of the first stage of the new Aquarium, now scheduled to commence at the coming midyear. It is a great relief that after many years of planning, necessarily delayed by the World War, the Korean War, and their aftermaths, the first step towards the creation of this new institution is about to be taken. The construction and preparatory costs are estimated at \$1,366,600 to be shared equally by the City and the Society. At the year's end an amount in excess of \$325,000 has been received or pledged toward the Society's share of the costs, which approximate \$680,000. We could not possibly have gone ahead with the creation of the first unit of this new and highly important institution, which will mean so much to the people of our city and nation, were it not for the extremely generous response from members of our own Board of Trustees, especially that of Mr. Laurance S. Rockefeller, who up to this time has contributed the major share of the funds in hand.

It must be emphasized that additional contributions will be of invaluable help. They are earnestly solicited. As in the creation of all such new enterprises, unexpected costs almost inevitably rise. Consequently, it is hoped that members and friends of the Society will take part in building up an adequate fund so that the opening of the new Aquarium, scheduled for approximately two years hence, will prove an outstanding success.

It is noteworthy that during the past eight years, culminating with the present one, the formidable sum of \$2,006,000 (in round figures) has been spent on the modernization and improvement of the Zoological Park. Of this amount \$405,000 has been paid from the capital funds of the Society, this figure including \$202,000 for the modernization of the Reptile House, carried out during the present year; \$975,000 has been derived and paid from the revenues gained from the operation of Facilities in the Zoological Park; \$436,000 received from the City of New York; finally, \$190,000 received from the State of New York.

The major job, accomplished during the year, has been the complete remodelling and modernization of the interior of the

Reptile House, which was undertaken after the City invested \$98,500 in the re-roofing of the building. The Reptile House was one of the first in the Zoo, built more than 50 years ago. The changes being made should make this exhibition building the finest of its kind now in existence. Formal public opening will take place during the latter part of May, 1954.

Finances. Expenses of operation were met with a balance of \$13,036.89 of income over expenditures. Withdrawal of capital funds to help meet the construction costs of the new Aquarium, as well as the costs of improvements in the Zoological Park and increasing cost of general operations, indicate that operating deficits will be difficult if not impossible to avoid unless the Society's financial position is strengthened through substantial gifts and legacies.

Extremely warm appreciation is expressed to our membership who give continuing evidence of their interest in and loyalty to the work of the Society. During the year, \$45,070 was received in membership dues, the highest figure in our history. Such receipts are valuable in helping to meet operational costs. However, it is profoundly hoped that all members will bear in mind the needs for the maintenance and development of the work of our institution and consequently will do all that they can by making special contributions. Our Society is in the unique position of providing service to an extremely large public, as well as extending knowledge regarding the animal world and the need for its protection. No other organization here or abroad is faced with greater opportunities.

THE ZOOLOGICAL PARK

John Tee-Van, Director

WHEN THE ZOOLOGICAL SOCIETY was founded in 1895, its Charter stated that the Society had power to establish, maintain and control zoological and other collections "for the promotion of zoology" and for "the instruction and recreation of the people." As we look back over the years, we can see that zoology has been promoted most effectively, not only through observations of the animals in the Zoological Park and the resulting publications, but also through extensive programs of research affecting many departments. Recreation for the people has been provided abundantly by the Society, as a single visit to the Zoological Park will testify.

The Society's interest in and support of "instruction," or education, as it is now called, has been and continues to be extensive and highly diversified; but the Society's ways and means of providing instruction are not always realized or appreciated by the public or even by members of the Society. It is desirable, therefore, to review briefly some of the facets of this basic phase of our activities.

The Zoological Park's pre-eminence as an educational institution is well recognized. The key note to the Park is expressed on a sign immediately outside the Administration Building, which states that "This Park is a living textbook of Zoology." At the Park, staff officers are constantly involved in the task of devising new and better ways of telling the public what animals are, what they do and what their place is in the cosmos. This instruction begins with our labels, which have reached high levels of interpretation. While labels are most important, they are not always sufficient to tell the story of an animal or group of animals adequately. To fill the need, a series of small popular illustrated booklets describing the animals in greater detail have been produced; these can be obtained at various places in the Park at nominal cost.

The Society's and the Park's reputation as a source of zoological information for schools, colleges, newspapers and magazines, etc., is a distinguished one and a large part of staff officers' time is involved in answering the very large number of questions that continually pour in. To take care of stereotyped queries, mimeographed forms have been made available and are sent out. The Society's Educational Department's activities also encompass answering many zoological questions, large numbers of which are focused in the Question House -- a pioneer in such public informational activities.

The Society's small but important Educational Department constantly engages in bringing to the public and private schools of the metropolitan district lectures in which animals are taken into the school room. During the past five years these lectures alone reached 1,397 classes or groups! At the Park, guided tours by members of the Department are a potent and much-utilized aspect of the educational system of City schools and those of

other communities in the metropolitan district; in the last five years 579 groups have availed themselves of this service. Such tours are often directed towards specific subjects, such as the animals of a certain continent, carnivorous animals, animals that fly, etc. Formal visits by school groups to the Park since 1949 have been made by 13,471 classes totalling 573,295 students and teachers. Of considerable importance in making teachers aware of what the Zoological Park has to offer and how its collections and exhibits can best serve their educational interests, has been a continuing series of fifteen-week courses given at the Zoological Park by staff officers to elementary school teachers on how to utilize the Zoological Park and its collections as part of their curriculum.

Participation in radio and television programs is a continuing but spasmodic aspect of our educational program, and the development and distribution of motion picture films has been a most important and profitable part of the Society's educational interests. During the last year, extensive work has been done in the production of motion pictures with special emphasis on their teaching value -- notable among these are Dr. Oliver's "Snake Locomotion" and a new film recently issued, "Introducing the Reptiles."

In the realm of publications, Animal Kingdom, the Society's popular bi-monthly publication, is recognized as an important educational publication in the field of zoology; it is distributed not only to Society members and subscribers, but also world-wide to libraries, universities, colleges, zoological societies, etc. The Society's technical journal, Zoologica, has equally broad distribution and both publications are widely quoted not only in zoological circles but by the public at large.

Attendance at the Park during 1953--2,360,460--was 3.8% greater than in 1952 but this amount is still 2.2% below that of the average of the ten preceding years. Nevertheless, the Zoo maintained first place in attendance among the City's museums, zoos and botanical gardens. It is of interest to note that in 1952 the attendance of 24 cultural institutions in the City of New York was 2% under the attendance of 1951; the decrease in attendance at 25 institutions in 1953 compared with 1952 is 6%. The reason for this lessening of attendance is difficult to figure out, but the increased use of motor cars and the lack of parking facilities, plus the influence of television, are factors that must be considered.

The reports of the Animal Departments treat fully of additions and changes to the collections but the opportunity must be taken to comment on the wonderful collection of Birds of Paradise - 18 beautiful and striking birds from the interior of New Guinea - presented to us by Sir Edward Hallstrom, Chairman of the Taronga Zoological Trust of Sydney, Australia. Head Keeper Scott journeyed to Australia and New Guinea and brought back without a single loss this magnificent collection of birds to us and to three other zoos in the United States -- San Diego, St. Louis and Brookfield in Chicago. "Pete," our veteran Hippopotamus with the longevity record for all Hippopotamuses in captivity, passed away and has been replaced by a pair of young animals that have become a major attraction at the Park; the Hippopotamus quarters have been refurnished and we now exhibit these animals in excellent surroundings. Our unique pair of Platypuses, the only ones ever exhibited outside of Australia,

and maintainers of an outstanding longevity record, having been with us since 1947, stimulated and tantalized the Park and the world by their unsuccessful attempt to produce offspring. We hope that their experience will result in more definite accomplishment in 1954. During the winter season, the Platypuses were placed on exhibition in the Heads and Horns Museum.

Among special animal rarities exhibited was a rare New Zealand Lizard, the Tuatara -- enabling the Reptile Department to exhibit all four orders of reptiles at one time.

A loss of first-rank was caused by the death of "Herbert," our young Walrus, who had endeared himself to so many. A rubber ball, possibly innocently thrown into "Herbert's" pool, was the cause of his death -- the ball becoming impacted in the digestive tract.

Major construction during the year included the completion of the new Bronxdale Parking Field, which has proved of tremendous value in ameliorating the Park's parking problems, plus the completion of the new Casting Pool at Bronxdale and a Comfort Station in the northeastern portion of the Zoological Park near the Parking Field. Through the City's Capital Budget, the Reptile House was re-roofed and during the year a great deal of work was completed on the rejuvenation of the interior of this building, first opened to the public in the winter of 1899-1900.

As a means of directing visitors to new and special exhibits, a series of signs entitled "Of Special Interest" have been installed in pertinent parts of the Park. These signs include a map of the Park with space around its borders for placards calling attention by means of colored tapes to where new exhibits are to be found. The signs also provide information about restaurant and other services in the Zoo and also call attention to the fact that all funds derived from facilities operation are utilized for the improvement of the Park.

A very large sign saying "ZOO" has been placed at the Boston Road Entrance to enable visitors coming by subway, who are now debouched at the 177th Street station of the transit system, to more easily find the Zoo's entrance. The sign can be seen easily from 178th Street and should facilitate access to the Park which has been made more difficult by the elimination of the 180th Street subway station.

The widening and repaving of the road from the Bronxdale Parking Field to the Fountain Circle now gives us an adequate and pleasing approach from the new Parking Field to the principal exhibits. The road passes along the edge of Lake Agassiz, drained, dredged and cleaned during the fall, and provides beautiful sylvan vistas. The cooperation of the City of New York in supplying Capital Funds for half of this work and for half of the costs of the Parking Field and Comfort Station is deeply appreciated. The Park Department's engineers have also been engaged in making plans for re-roofing a considerable number of our buildings, plus other important jobs involving heating and water systems.

A program of turf and paddock renovation, counselled by an agronomist at Rutgers University, was started during the fall. It will lead to better upkeep of the grass and paddock within the Park's grounds.

The Society's Annual Meetings, held for the first time at the Hunter College Auditorium, were attended by 3,500 members, guests and friends. Presenting the meeting at Hunter College

Auditorium caused considerable changes in programs, as we were not able to put on exhibitions of living animals and other displays as had been done for so many years at the Waldorf-Astoria. However, the changed program was an excellent one and much appreciated by our members.

The Garden Party at the Park, attended by 2,300 members and their guests, provided a new form of entertainment - a parade of animals on Baird Court combined with a few animal displays enabling members' children to come into close association with snakes, chimpanzees and other animals.

Three hundred members and guests of the National Audubon Society, visiting New York on the occasion of the Annual Conference of that organization, came to the Zoological Park where luncheon was provided for them and special tours given by staff officers.

The American Society of Ichthyologists and Herpetologists, the national organization of those who study fishes and reptiles, spent one day of its three-day New York Conference at the Zoological Park. The meeting was an excellent one, well-attended and with many well-presented first-rate technical papers. The Society's ichthyologists and herpetologist, Coates, Gordon, Nigrelli Atz, Oliver and Tee-Van, presented papers and Mr. Coates gave a most interesting exhibition, using an oscillograph, of the electric eel's extraordinary powers.

Of great importance was the presentation to the Society by Mr. Saul Blickman, a Founder of the Zoological Society, of a large amount of motion picture film taken by him in Africa. The photography in itself is very beautiful and forms the basis of a whole series of motion pictures that are being developed of various groups of animals. These will show the animal itself with its physical, anatomical and other features photographed in the Park to supplement the beautiful illustrations of the animals in their unconfined African state. Mr. Blickman, in addition to presenting the films, provided funds for cutting and editing the material. The films will be part of the Society's educational film library, and the first of the series, "Let's Look at Elephants," was shown to our members at the January, 1954, Annual Meetings.

During the last decade the closer association of members of our staff with those of other zoological parks both here and abroad has been fostered with resulting good-will and cooperation both institutionally and individually. The friendships developed, with their resulting cooperation, have been extensive and worthwhile. In August and September the Director visited 23 zoological gardens and parks in eleven countries in Europe and attended a seven-day meeting in Antwerp of the International Union of Directors of Zoological Gardens, meeting there a number of heads of institutions that were not visited. In keeping with this policy, the Society presented animals to the London Zoo for the special Coronation Exhibit at Regent's Park, and a small collection of animals was presented as a gift from the City of New York and the Zoological Park to the Biblical Zoo of Jerusalem, Israel.

Continuing the Society's policy of having its officers meet with other workers in zoological parks and aquariums and in research, many of the Society's officers attended meetings at various places around the country and abroad. The Director's visit to European zoos has already been mentioned.

1. Dr. Gordon visited the laboratories of Dr. Curt Kosswig, eminent Geneticist at Istanbul, Turkey. Dr. Gordon went to the University of North Carolina to give advice on the care of platyfishes and swordtails being used as experimental animals there and also presented a seminar at the University's Department of Zoology on the genetics of atypical pigment cell growth.
2. Mr. Coates attended the Denver, Colorado, Annual Meeting of the American Association of Zoological Parks and Aquariums.
3. Dr. Nigrelli attended the Milwaukee Meeting of the American Fisheries Society, where he took part in a symposium on the diseases of fish.
4. Dr. Gordon was present at the International Congress of Zoology at Copenhagen, Denmark, and the Ninth International Congress of Genetics at Bellagio, Italy.
5. Mr. Atz went to a conference in Washington, D.C., where he spoke on orientation and schooling of fishes.
6. Our staff photographer, Sam Dunton, attended the convention of the Biological Photographic Association in Los Angeles, where he won first prize for his photograph of a Tiger Swallowtail Caterpillar and honorable mention with a picture of a Parasol Ant carrying a piece of leaf.
7. Mr. Coates attended the Nineteenth International Physiological Congress held in Montreal, where the latest studies of the physiology of the electric eel were reported.
8. Mr. Coates attended the Bretton Woods Conference of the Northeast Division of the American Fisheries Society and the Northeast Section of the Wildlife Society.
9. Dr. Gordon attended the Sixth Annual Scientific Meeting of the Detroit Institute of Cancer Research, where he spoke concerning the hereditary influences that may lead to cancer development, particularly melanomas in fishes.
10. Dr. Nigrelli and Dr. Quaranta, Research Associate in Animal Behavior, attended the Annual Christmas Meetings of the American Association for the Advancement of Science held in Boston.

The interests of the Society's employees continued to be maintained through the functioning of Zoological Park Council. At the Council's suggestion, a 42-page "Handbook of Rules, Regulations & Information" embodying the many rules, agreements and traditions that have become part of life in the Zoo, has been issued. The thanks of the Society and its members and that of the Staff are given wholeheartedly to the employees who make possible the smooth and efficient operation of the Zoological Park.

Once again, thanks should be given to the Zoological Park Council's offshoot, the Safety Committee. During the past year the Committee has worked efficiently and well, reporting potential sources of danger both to employees and the public, and providing an overall surveying mechanism that functions toward the reduction of premium policies on liability insurance.

THE ANIMAL DEPARTMENTS

MAMMALS AND BIRDS

Robert M. McClung, Acting Curator, Mammals and Birds
Grace Davall, Assistant Curator, Mammals and Birds
August Schilling, Head Keeper of Mammals
George Scott, Head Keeper of Birds
Lee S. Crandall, General Curator Emeritus

DESPITE continuing difficulties encountered in obtaining animals from many remote or disturbed areas of the world, the Mammal and Bird Departments were able to secure a good number of rare and unusual new specimens during the past year. Animals native to every continent except North America were purchased; Fennec Foxes and shimmering Sunbirds, for example, from Africa; Lesser Pandas and tiny White-eyes from Asia; a Great Red Kangaroo and a Gray Phalanger from Australia; a Mountain Tapir and a Capuchin Bird from South America; Bohemian Waxwings and a Dalmatian Pelican from Europe; Birds of Paradise and Spotted Cuscuses from the New Guinea area.

Although no new major exhibit areas were constructed during the year, a number of changes were made in the interior of the Elephant House, greatly improving its appearance. The top section of bars was removed from the front of the Hippopotamus pool, which was entirely renovated. The interiors of both the Elephant House and Antelope House were repainted in accordance with the coordinated color plan now being put into execution throughout the Park. Many repairs were made in the Animal Nursery, which was also entirely repainted.

Some time ago, Sir Edward Hallstrom, President of the Taronga Zoological Trust of Sydney, Australia, offered a collection of Birds of Paradise as gifts to four American zoos, including the New York Zoological Park. When Sir Edward reported that the birds were ready in New Guinea last spring, the four zoos - San Diego, St. Louis, Chicago and New York - unanimously selected George Scott, our Head Keeper of Birds, as the man to travel to New Guinea and bring back this rare and beautiful collection. Mr. Scott left for New Guinea on April 25 and returned on July 14, bringing back a total of 72 Birds of Paradise without a single loss enroute.

During the year, gifts of native American animals were sent to the London Zoo, the Split Drustvo Marjan Zoo in Yugoslavia, the Wassenaar Zoo in the Netherlands and the Biblical Zoo in Jerusalem. Surplus mammals in our collection were sold for a total of \$8,810.

MAMMALS - In 1953 a total of 118 births were recorded in the Mammal collection, of which 91 were living on December 31. These were 33 forms, as follows: 1 White-handed Gibbon, 1 Guinea Baboon, 1 Angola Colobus, 2 Black-tailed Marmosets, 2 Common Marmosets, 4 Patagonian Cavies, 1 Llama, 2 Bengal Tigers, 1 California Sea Lion, 1 Grevy Zebra, 1 Gayal, 3 Aoudads, 3 Himalayan Tahr, 3

Mouflon, 3 Arabian Gazelles, 1 Blue Duiker Hybrid, 1 Gaboon Duiker, 1 Eland, 1 Nyala, 4 Blackbuck, 8 Muntjac, 6 Axis Deer, 5 Red Deer, 1 Fallow Deer, 6 Barasingha Deer, 1 Indian Sambar Deer, 5 Formosan Deer, 7 Japanese Sika Deer, 1 Dybowski's Deer, 3 Pere David's Deer, 1 Chinese Water Deer, 7 White-tailed Deer, 3 Rocky Mountain Elk.

Especially gratifying were the births and continued good condition of the Angola Colobus, Black-tailed Marmosets, Arabian Gazelles and Gaboon Duiker. None of these species had been successfully raised in the Park previously.

Other mammal arrivals totalled 45, of which 22 were purchases, 20 were gifts and 3 were received in trade.

We had the misfortune of losing two of our most popular and endearing animals in 1953. On March 17 "Herbert," our Atlantic Walrus, died, the victim of an intestinal obstruction caused by a broken rubber ball thrown into his pool by some thoughtless visitor. Approximately two years old when he died, "Herbert" weighed 958 pounds and was otherwise in perfect condition.

On February 1, our venerable male Hippopotamus, "Pete," died at the world record-breaking age of 49 years, 6 months and 19 days. "Pete," born in the Central Park Zoo, had been in the Bronx since July 14, 1906, and had become a veritable "institution" to our visitors.

A year-old Hippopotamus, 259-pound "Peter II," was purchased in July, and "Phoebe," his prospective future mate, was purchased in October. These two youngsters have made themselves thoroughly at home in our renovated Hippopotamus cage and pool, where it is hoped that they will match or surpass the original "Pete's" record. A pair of young Pigmy Hippopotamuses was also bought, bringing our total Hippopotamus population to four.

Four Black-faced Chimpanzees were acquired early in the year. These "Little Women," named "Amy," "Beth," "Jo" and "Meg," respectively, have proved to be star attractions in the Great Apes House. During the summer, crowds gathered daily to watch their antics as they played in their outdoor moated area.

To the best of our knowledge, the New York Zoological Park is the only zoo ever to exhibit the Mountain Tapir (Tapirus roulini). We were unsuccessful in keeping our first two specimens, a female obtained in 1950 and a male received in 1952, both of which died in 1952. It was a challenge, therefore, when the opportunity presented itself to secure a third specimen of this rare and interesting tapir. We received this animal, a female still having its striped baby coat, on September 3. It was settled in the Antelope House, where it has thrived. We have every reason to hope that it will continue to do well.

Species new to our collection include a beautiful pair of Red-backed Saki Monkeys (Chiropotes chiropotes); and Illiger's Marmoset (Leontocebus illigeri); and 2 Spotted Cuscuses (Spilocuscus maculatus).

Early in the spring, "Mambo," our three-year-old male Lowland Gorilla, was transferred from the Nursery to the Great Apes House. There he was introduced to "Sumaili," our five-year-old female Mountain Gorilla, and after a few days of mutual mistrust they became fast friends. Both youngsters are growing at a fast rate, "Sumaili" weighing 128 pounds and "Mambo" 72 pounds at the end of the year.

When "Penelope," our female Platypus, gave positive evidence

of breeding and nesting activities during the summer, public interest and publicity were immediate and astonishing, not only in the United States but all over the world. All through the summer we watched and waited with fingers crossed, hoping that there were baby Platypuses in an underground nest. Great was the disappointment, when on November 5 we opened the clay bank, to find neither nest nor young.

CENSUS OF MAMMALS
December 31, 1953

<u>Orders</u>	<u>Species</u>	<u>Specimens</u>
MONOTREMATA		
Platypus and Echidnas	1	2
MARSUPIALIA		
Kangaroos, Opossums, etc.	10	19
INSECTIVORA		
Moles, Shrews, Hedgehogs, etc	1	1
PRIMATES		
Apes, Baboons, Monkeys, Lemurs, etc . . .	54	98
EDENTATA		
Armadillos, Sloths and Anteaters.	2	3
RODENTIA		
Squirrels, Marmots, Beaver, etc	15	29
CARNIVORA		
Cats, Dogs, Bears, etc.	34	80
PINNIPEDIA		
Sea Lions, Walruses, Seals.	3	8
PROBOSCIDEA		
Elephants	3	5
PERISSODACTYLA		
Rhinoceroses, Horses, Tapirs.	7	11
ARTIODACTYLA		
Hippopotamuses, Camels, Deer, Cattle, etc.	59	318
<u>TOTALS</u>	189	574

Summary: Orders, 11; Species, 189; Specimens 574.

BIRDS - Arrivals for the year totalled 329 specimens, of which 141 were acquired by purchase, 159 were gifts, 6 were received in trade, 4 were collected and 19 were hatched in the Park.

By far the most important acquisition during the year was the collection of Birds of Paradise presented by Sir Edward Hallstrom and received at the Park on July 14. The gift consisted of 17 specimens of 10 different forms, 9 of them new to our collection. All of these birds settled in well, and at the end of the year a number of them had gone through successful moults and were beginning to display.

Several colorful and rare South American birds, collected by Charles Cordier in Dutch Guiana and Martinique, were acquired during the summer. The greatest single prize was a fine specimen of the Calf Bird or Capuchin Bird (Perissocephalus tricolor). It appears that this species has never before been exhibited in a zoo. Other notable specimens included a number of fine Humming-

birds and Ant-thrushes.

Early in March we were fortunate in obtaining 9 showy Sun-birds of 5 different species, collected in Kenya. These, together with Hummingbirds, Callistes and several of the most beautiful smaller Birds of Paradise, make our Jewel Room display one of the best exhibits of the kind anywhere.

Through arrangements made by Dr. Beebe, we were fortunate in obtaining two specimens of the rare Guilding's Amazon Parrot, found only on the island of St. Vincent. These colorful birds, unrepresented in our collection since 1933, were the gift of Mr. and Mrs. George J. Muller.

Below are listed the forms new to our collection which were acquired in 1953:

Saker Falcon - Falco cherrug cherrug Gray

Pin-tailed Sand Grouse - Pterocles alchata alchata (Linnaeus)

New Guinea Barn Owl - Tyto tenebricosa arfaki (Schlegel)

Emerald-throated Hummingbird - Sericotes holosericeus holosericeus (Linnaeus)

Gilt-crested Hummingbird - Orthorhynchus cristatus exilis (Gmelin)

Blue-headed Wood Nymph - Cyanophaia bicolor (Gmelin)

Crimson Topaz - Topaza pella pella (Linnaeus)

Black-spotted Barbet - Capito niger niger (Muller)

Levaillant's Woodhewer - Xiphorhynchus pardalotus pardalotus (Vieillot)

Para Great Ant-thrush - Taraba major semifasciatus (Cabanis)

Black-crested Ant-thrush - Sakesphorus canadensis canadensis (Linnaeus)

Rufous-throated Ant-thrush - Gymnopithys rufigula rufigula (Boddaert)

White-fronted Ant-thrush - Pithys albifrons albifrons Linnaeus

Capuchin Bird - Perissocephalus tricolor (Muller)

White-crowned Black Manakin - Pipra pipra pipra Linnaeus

Aurora Manakin - Pipra aureola aureola (Linnaeus)

Golden-headed Manakin - Pipra erythrocephala erythrocephala (Linnaeus)

White-breasted Manakin - Manacus manacus manacus (Linnaeus)

White-shouldered Water Tyrant - Fluvicola pica pica (Boddaert)

MacGregor's Bird of Paradise - Cnemophilus macgregorii De Vis

Blood's Long-tailed Bird of Paradise - Epimachus meyeri bloodi Mayr & Gilliard

Mayr's Gorgetted Bird of Paradise - Astrapia stephaniae ducalis Mayr

Ribbon-tailed Bird of Paradise - Astrapia mayeri Stonor

Finsch's Bird of Paradise - Paradisaea minor finschi Meyer

Margaret's Blue Bird of Paradise - Paradisaea rudolphi margaritae Mayr & Gilliard

Stresemann's King Bird of Paradise - Cicinnurus regius similis Stresemann

Golden-winged Magnificent Bird of Paradise - Diphyllodes magnificus chrysopterus Elliot

Golden-crowned Six-plumed Bird of Paradise - Parotia carolae chrysenia Stresemann

Martinique Solitaire - Myadestes genibarbis genibarbis Swainson

Scarlet-tufted Malachite Sunbird - Nectarinia johnstoni johnstoni Shelley

Tacazze Sunbird - Nectarinia tacazze Stanley

Golden-winged Sunbird - Drepanorhynchus reichenowi Fischer
Kenya Double-collared Sunbird - Cinnyris mediocris mediocris
Shelley
Orange-throated Sugarbird - Euneornis campestris (Linnaeus)
Martinique Oriole - Icterus bonana (Linnaeus)
Rothschild's Blue Grosbeak - Cyanocampsa cyanodes rothschildii
(Bartlett)
Martinique Grosbeak - Loxigilla noctis noctis (Linnaeus)
Silent Pectoral Sparrow - Arremon taciturnus taciturnus (Hermann)

Important losses during the year included our Shoebill
Stork and our only Ocellated Turkey, which was killed by a
Raccoon. On December 14, a Black-necked Stilt received here on
October 30, 1934, died, having established a record for lon-
gevity in captivity.

CENSUS OF BIRDS
December 31, 1953

<u>Orders</u>	<u>Species</u>	<u>Specimens</u>
STRUTHIONIFORMES		
Ostriches.	1	1
RHEIFORMES		
Rheas.	2	3
CASUARIIFORMES		
Cassowaries and Emus.	2	3
TINAMIFORMES		
Tinamous	1	1
SPHENISCIFORMES		
Penguins	7	19
PELECANIFORMES		
Pelicans and Gannets, etc.	9	20
CICONIIFORMES		
Herons, Egrets, Ibises, Storks, etc.	25	49
ANSERIFORMES		
Swans, Ducks, Geese and Screamers.	58	389
FALCONIFORMES		
Vultures, Hawks and Eagles	23	28
GALLIFORMES		
Quail, Pheasants, etc.	44	116
GRUIFORMES		
Hemipodes, Cranes, Trumpeters, Rails, etc.	19	40
CHARADRIIFORMES		
Plovers, Sandpipers, Gulls, etc.	12	34
COLUMBIFORMES		
Pigeons, Doves and Sandgrouse.	34	76
PSITTACIFORMES		
Parrots, etc	23	32
CUCULIFORMES		
Touracos and Cuckoos	5	8
STRIGIFORMES		
Owls	9	14
APODIFORMES		
Hummingbirds	5	13
COLIIFORMES		
Colies	1	1
TROGONIFORMES		
Trogons and Quetzals.	1	2
CORACIIFORMES		
Kingfishers, Hornbills, etc	7	7
PICIFORMES		
Barbets, Toucans and Woodpeckers	23	32
PASSERIFORMES		
Perching Birds	237	513
<u>TOTALS</u>	548	1,401

Summary: Orders, 22; Species, 548; Specimens, 1,401

DEPARTMENT OF REPTILES

James A. Oliver, Curator
Fred Taggart, Head Keeper

THE PAST YEAR was a very difficult one from the standpoint of operations, but one which happily brought to completion the structural remodeling of the Reptile House. This building, first opened to the public in the winter of 1899-1900, is the second oldest building in the Zoological Park. The extensive construction work will provide us with virtually a new building. The new installations will enable us to house comfortably all types of reptiles and amphibians, and to exhibit them in spectacularly attractive surroundings.

The building was closed to the public early in March. At this time preparations were made for moving the collection into temporary quarters. This was no easy task. Storage cages had to be found or made for giant tortoises, large crocodilians up to eleven feet in length and a quarter of a ton in weight, long pythons and anacondas up to twenty feet in length, as well as numerous smaller specimens. At the beginning of the year the collection numbered more than 400 specimens. It was reduced to a desirable minimum of about 200 individuals through exchanges, sales and gifts to other zoological parks. Through the kindness of the Department of Mammals and Birds some of the collection was housed in the Aquatic Bird House and the giant tortoises were placed in the Elephant House. A few small exhibits were left in the lobby of the Reptile House, but most of the snakes and small lizards were placed in the basement of the Heads and Horns Building. When the animals were moved out of the Reptile House, it was planned that they would remain in temporary quarters for only four or five months. The contractor moved in and started his operations on May 1.

The work progressed smoothly and on schedule until the end of July. At this time the concrete, sand and gravel truckers went out on strike, tying up all building activities in the metropolitan area for nine weeks. The actual disrupting effects of the strike were felt much longer. As a result of this strike the building program could not be brought to completion in time for a fall opening. In fact, a few minor adjustments are still being made as the year closes. The delay in completing the construction work required that the collection be kept in temporary quarters far longer than was originally planned and resulted in the unfortunate loss of several rare and valuable specimens. The fact that more animals were not lost during this difficult period is a great tribute to the care and concern of the keepers.

The first group of specimens was moved back into the Reptile House in November and by the end of the year most of the collection was again housed under one roof. Much work remains to be done in the interior of the building--labelling, planting, decorating the cages and setting up the smaller educational exhibits. This important work will provide the necessary decor to make the Reptile House a truly outstanding educational show.

The Reptile Department was saddened by the hospitalization of Head Keeper Taggart for a leg amputation operation in October. Taggart's experience and service have been missed during his absence, but fortunately he is making a surprisingly good recovery and all his friends in the Zoological Park wish him a speedy convalescence.

At the Members' Meetings in January the first of the planned series of educational films on reptiles was shown. The first film, entitled "Locomotion of Snakes," was very well received by the members and their guests. Following the meetings the film was shown to several professional groups, including the Kennicott Club of Chicago, the Herpetological Club of Philadelphia, the American Society of Ichthyologists and Herpetologists and the American Association for the Advancement of Science. All were most generous in their favorable comments. This picture has been turned over to the McGraw-Hill Company for general sale to schools and other interested organizations.

Encouraged by the response to the "Locomotion of Snakes," we began work on the second film in the series. This film will serve as the introductory number for the series and is entitled "Introducing the Reptiles." In late May and early June, Staff Photographer Sam Dunton, Curator of Publications William Bridges and Curator of Reptiles James A. Oliver journeyed to southern Florida in company with Dr. Theodore Kazimiroff to obtain motion pictures of marine turtles laying their eggs, alligator nesting habits and underwater photographs of turtles swimming. Through the cordial cooperation of the Everglades National Park staff, particularly Dr. Joseph C. Moore, and Curator F.G. Wood, Jr., of Marine Studios, we were able to secure excellent footage that is included in the introductory film. This motion picture was completed in December and will be released for distribution along with the other Zoological Park films.

One of the highlights of the year was the annual meeting in New York City of the American Society of Ichthyologists and Herpetologists. This meeting was jointly sponsored by the New York Zoological Society and The American Museum of Natural History. The final day of formal meetings was held at the Zoological Park where the group was entertained with a luncheon at the Zoobar. Dr. Oliver, with other staff members at the Zoological Park, served on the local committee for the meetings. The visiting herpetologists were not able to see our remodeled Reptile House, but they saw the work in progress and were given a good chance to check their herpetological knowledge, since all of the labels had been removed from the Reptile House exhibits in preparation for the construction work.

REPTILES AND AMPHIBIANS - With the Reptile House closed for remodeling, no effort was made to acquire exhibition specimens during the first half of the year. Planning on a reopening date early in the fall, some orders were placed for material to arrive in the summer. Most of these were cancelled as soon as it was realized that we would be unable to open the building as scheduled, but a few could not be postponed. As a result of these purchases, a few exchanges and numerous gifts, we received 307 specimens during the year. This number represents a reduction of 43% over the previous year, reflecting the curtailment of activities resulting from the construction work. Of the total number of specimens accessioned, 186 were gifts, 84 were incoming ex-

changes and 37 were purchases. Compared to these figures, we sent out 216 specimens on exchanges, 45 as gifts and 13 as sales. The program of exchanges and gifts included the following institutions: The American Museum of Natural History, New York; Messinger Research Laboratory at Beth El Hospital, Brooklyn; Columbia University, New York University and Staten Island Zoological Park, New York; Lincoln Park Zoo, Chicago; Zoological Society of San Diego, California; Mr. S. Cook, Berkeley, California; Honolulu Zoological Park, Honolulu; Cap Ferrat Vivarium, France; Cologne Zoological Garden, Germany; Dr. Popp, Dessau, Germany; Dr. Eibl-Eibesfeldt, Westfalen, Germany; Mr. Erich Sochurek, Vienna; Aquarium, Maribor, Yugoslavia; Zoological Gardens of Ceylon, Tel Aviv Zoological Gardens, Israel; Biblical Zoo, Jerusalem.

Among the animals received were several species that were first timers for the collection. These included: 4 Yellow-spotted Amazon Turtles (Podocnemis unifilis); 1 Bahama Boa (Epicrates striatus); 3 Bahama Freshwater Turtles (Pseudemys malonei); 1 South American False Cobra (Pseustes sulphureus); 1 Palestine Tortoise (Testudo graeca floweri); 2 Giant One-horned Chameleons (Chameleo melleri); and 1 Salt-water Crocodile (Crocodylus porosus). In addition to these, several other species had not been represented in the collection for more than a decade. These were a Black Mamba, an Aruba Rattlesnake, a Paraguayan Anaconda and 5 Surinam Toads.

One of the most interesting animals received during the year was an individual belonging to a common species - the Common Box Turtle - of which we annually receive many specimens. The point of interest about this particular individual was its age, apparently a minimum of 129 years. This species is one of the longest lived and it is of considerable scientific interest when an authentic centenarian is found. Along with Curator of Publications William Bridges, Reporter John Rogers and Photographer Ira Rosenberg of the New York Herald Tribune, Dr. Oliver traveled to Hope Valley, Rhode Island, to gather information on the history of this turtle. It appears that its credentials are reliable beyond question and it is now accepted by most scientists as being authentic. The detailed story of this individual was related in Animal Kingdom for September-October, 1953.

Several very unfortunate deaths occurred, mostly near the end of the year and partly resulting from the effects of the prolonged stay in temporary quarters. Chief among these was the loss of our Tuatara, the old Hope Valley Box Turtle, and Tony, our large but gentle eleven-foot-long Alligator.

CENSUS OF REPTILES AND AMPHIBIANS
December 31, 1953

<u>Orders</u>	<u>Species</u>	<u>Specimens</u>
<u>AMPHIBIA</u>		
CAUDATA		
Salamanders.	5	12
SALIENTIA		
Frogs and Toads.	8	17
<u>REPTILIA</u>		
CROCODILIA		
Alligators and Crocodiles.	8	34
SQUAMATA		
Lizards.	9	17
Snakes	42	62
TESTUDINATA		
Turtles and Tortoises.	45	118
<u>TOTALS</u>	117	260

Summary: Orders, 5; Species, 117; Specimens, 260

Research activities in the Department were carried on in a limited fashion because of the disturbed conditions resulting from the construction work. Cooperation was extended to other departments and institutions in the furtherance of their research programs. The Curator, in collaboration with Mr. Charles E. Shaw of the Zoological Society of San Diego, published a report on "The Amphibians and Reptiles of the Hawaiian Islands." This paper appeared in Zoologica, Vol. 38, Part 2, of September, 1953.

In addition to the report in Zoologica, Dr. Oliver published four articles in Animal Kingdom during the year:

- "The Timeless Tuatara"- Vol. 56, No. 1 pp. 2-8
- "The Oldest Inhabitant of the Zoo"- Vol. 56, No. 3, pp. 76-78
- "Young Billy Johnson's Old Box Turtle"- Vol. 56, No. 5, pp. 154-156
- "In a Florida Alligator Nursery"- Vol. 56, No. 6, pp. 181-186

Three lectures were given on snakes to the Pearl River Rotary Club at Pearl River, New York, to the Father and Son Boy Scout Dinner in Teaneck, New Jersey, and to the Fortnightly Club of Tenafly, New Jersey.

ANIMAL HOSPITAL

Leonard J. Goss, Assistant Director; Veterinarian
Charles P. Gandal, Assistant Veterinarian

THERE WERE NO outstanding developments in the Hospital Department during the year. Several perennial problems still exist; the solutions to them unfortunately have not been found. Of major concern is the loss each year of several newborn from the Nyala herd. For a number of years this species propagated well, to the point where the herd numbered sixteen and we were able to dispose of surplus males to other zoos. The young usually are born in December and January in heated winter quarters. For the past several years there have been premature births and deaths of young a few days after birth. So far we have been unable to attribute these occurrences to any single factor. In a few cases animals too weak at birth to nurse have benefited by several feedings of cow's milk by tube.

Another troublesome occurrence is occasional, explosive "outbreaks" of acute fatal gastro-enteritis in the deer herds. Usually only one herd is affected at a time. One to three or four deer in a herd are found dead or die in two or three days. Lesions consist of acute inflammation of the abomasum and intestine and are occasionally associated with ecchymotic hemorrhages beneath the serosa of the rumen. The condition is not infectious in nature, nor has food poisoning been established as the cause. The cause remains undetermined.

Two great losses in the mammal collection were "Pete," the Hippopotamus, and "Herbert," the Walrus. The former had become quite feeble due to arthritis and was dispatched on February 1. At death he weighed 3,102 pounds. The Walrus arrived as a 240-pound baby on October 18, 1951, and had attained a weight of 958 pounds when he suddenly went off feed and six days later died on March 17. His death resulted from the ingestion of a large fragment of a hollow rubber ball that had passed three-quarters of the way through his intestinal tract. Important in the rearing of the Walrus was his diet. On arrival at the Zoo at approximately seven months of age, he was fed twice daily according to the following formula: 5 pounds of cut-up mackerel in 1,000 cc. of a milk-and-oil mixture consisting of 600 cc. canned evaporated milk, 350 cc. corn oil and 50 cc. U.S.P. cod liver oil. The milk-and-oil mixture was continued until death, at which time the fish quota was 20 pounds of mackerel twice daily.

The Tuatara died July 24 following a period of inappetance.

Four female Chimpanzees weighing from 10 to 13 pounds each were received in the hospital on April 6. Following the various laboratory tests they were adjusted to Zoo diet, captivity and each other under the experienced hand of Hospital Attendant James Coder. On June 16 they were released for exhibition in the Great Apes House and have become the star performers of the anthropoid collection. During their hospital stay of ten weeks their respective weight gains were: Jo, 4 pounds; Meg, 6.7 pounds;

Amy 9.9 pounds; and Beth, 9.7 pounds.

During the year two cases of mammalian tuberculosis occurred. The first involved a ten-year-old Indian Sambar doe on January 8; the second, a ten-year-old Indian Sambar buck on December 14. Tuberculosis has never been a problem in the deer herds, but experience shows that aging deer frequently die of this disease.

On August 24 Miss Mary A. Murphy assumed the duties of Registered Nurse in charge of First Aid, and laboratory technician. She succeeded Mrs. Eugene Twigg who resigned for maternity reasons. During the year the First Aid service handled 2,338 cases. The employees provided 39 pints of blood to the blood bank, 24 of which were used as transfusions for four employees or members of their immediate families.

The following meetings were attended by the veterinarians:

Annual Conference for Veterinarians, Cornell University
Regional Meeting of American Animal Hospital Association
Wildlife Disease Association

Papers were given before these groups:

Veterinary students, Cornell University
Long Island Veterinary Medical Association
Bronx Medical Fraternity
Psittacosis Symposium sponsored by Rutgers University
Army Medical Service Graduate School
Regional Meeting of American Animal Hospital Association

Veterinary consultation was provided to several commercial and university research laboratories, including the National Institute of Health, the New York City Health Department regarding Civilian Defense, the United States Bureau of Animal Industry, and the United States Public Health Service on behalf of the American Association of Zoological Parks and Aquariums regarding importation of wild mammals and birds.

The New York Times of February 18 carried an illustrated feature article on the Animal Hospital.

Research on the toxicity of snake venom and snake bite therapy was curtailed because of the closing of the Reptile House and concomitant demands on Dr. Oliver's time. Bird anesthesia research is still in progress.

Sixty-four specimens were dispatched to other research institutions with which we collaborated. An additional 53 specimens - 23 mammals and 30 birds - went to the American Museum of Natural History.

Birds hospitalized during the year numbered 70 for 1,121 hospital days. One hundred and thirty-four mammals were hospitalized for 3,373 hospital days.

Outpatient treatments numbered 242 mammals, 71 birds and 50 reptiles.

The mortality tables following require some explanation. "Total in Collection" is arrived at by adding to the census at the beginning of the year all animals acquired by purchase, exchange, gift or born alive. Animals disposed of alive by sale or exchange during the year are not deducted. Contrary to the

policy of some zoological gardens, no acclimatization period following birth or arrival is allowed.

MORTALITY TABLES FOR 1953

MAMMALS

<u>Year</u>	<u>Total in Collection</u>	<u>Died</u>	<u>Mortality Percentage</u>
1953	733	115	15.68
1952	686	119	17.34
1951	691	104	15.05
1950	697	117	16.78
1949	<u>721</u>	<u>115</u>	15.95
Totals	3528	570	
Average mortality for past 5 years:			16.15
Average mortality for past 17 years:			19.13

BIRDS

<u>Year</u>	<u>Total in Collection</u>	<u>Died</u>	<u>Mortality Percentage</u>
1953	1728	271	15.68
1952	1586	279	17.59
1951	1617	250	15.46
1950	1816	283	15.58
1949	<u>1645</u>	<u>248</u>	15.07
Totals	8392	1331	
Average mortality for past 5 years:			15.86
Average mortality for past 17 years:			16.24

DEPARTMENT OF EDUCATION

Herbert J. Knobloch, Assistant Curator
Mildred Levine, Assistant
Ruth Manecke Gruber, Assistant

SPRING VISITS to the Zoological Park and the Farm-in-the-Zoo appear to be an established part of the educational routine in New York City and vicinity, for the visits of schools, classes and organized groups remained at a high--although not record-breaking--level in 1953 despite adverse spring weather.

	1953	1952
Schools and Organizations	2,175	2,035
Classes and Organized Groups	2,803	2,905
Total School/Group Attendance	124,481	131,221

May was, as usual, the busiest month of school-and-group attendance, with 1,088 classes and organized groups from 731 schools and organizations, totalling 48,042 students, visiting the Zoo and the Farm. These are new one-month records.

VISUAL AIDS - Again this past year, working closely with the Department of Publication and Photography, the department spent a great deal of time on the production of motion picture films, and at the end of the year four films were completed. These were: "Around the Year at the Zoo," concerned with happenings in the Zoological Park in 1953; "Introducing the Reptiles," the first of the "Living Reptile Series;" "Biologists in a Tropical Laboratory," about the activities of the Department of Tropical Research in Trinidad; and "Let's Look at Elephants." The first of these films is silent, and was made mainly for showing to our members at the Annual Meeting. It will be used by staff officers for lecture purposes. The last of the four was produced in cooperation with Evan J. Anton Productions, Ltd. "Introducing the Reptiles," "Biologists in the Tropics" and "Let's Look at Elephants" are complete with sound track (narration, music and sound effects).

Early in the year seven of our films were turned over to the McGraw-Hill Company for national distribution on a sales basis. The seven are "Andy's Animal Alphabet," "Stars in Stripes," "The World of Water," "Strangers From Afar," "The Younger Generation," "Looking for the Answers" and "The Locomotion of Snakes." To these will be added the three new sound films produced this past year.

A certain amount of film distribution is handled by the Department of Education and our films ~~were~~ sent out on 101 rental orders and were viewed by 10,823 persons. Five prints, other than those taken over by McGraw-Hill, were sold directly from the Park. There were 13 requests for previews and 29 requests for special showings of various films. On 27 occasions staff officers used our motion pictures to illustrate lectures.

GUIDED TOURS - Guided tours, numbering 93, were conducted for 3,338 students. Seven Behind-the-Scenes tours were conducted for 31 members and their guests.

LECTURES - Members of the department gave 14 lectures, addressing audiences totalling approximately 1,000 persons, during the year. The department also participated in three television shows.

SCHOOL LECTURE SERVICE - Ruth Manecke Gruber visited 129 schools and organizations and gave 426 animal illustrated talks to 33,786 children. All of these totals are new highs. The new record figures were caused in part by the fact that the school lecture service was particularly active during the summer, more so, in fact, than it had ever been since its start in 1944. Throughout the summer season Mrs. Gruber visited many playschools, nursery schools, day camps, girl scout troops and camps, and church schools.

QUESTION HOUSE - The Question House opened on Sunday, April 26, and closed on Sunday, November 8. Throughout the season it was closed very few days because of inclement weather, and 41,390 recorded visitors used its facilities, asking 17,911 questions. These were:

Miscellaneous animal questions	-	14,083
Questions requiring research	-	82
Platypus questions	-	1,259
Directional questions	-	2,488
		<hr/>
		17,911

The large number of questions about the Platypuses was, of course, a result of the publicity attending the supposed breeding of the animals.

At the close of the 1953 Question House season, the building was taken over by the Facilities Department for the sale of publications and souvenirs, following a period of renovation in which new shelving, display cases and new lighting were put in. Both the interior and exterior got a general face-lifting with new signs and a fresh coat of paint. The building will continue to be used as a publication and souvenir sales place until it opens again as Question House in the Spring of 1954.

MISCELLANEOUS - The eighth successive 15-week in-service course for elementary school teachers, "Materials and Methods in the Use of the New York Zoological Park (Bronx Zoo) in Elementary Education," began on Tuesday, February 10, and terminated on Tuesday, May 26. As in the past Mr. Knobloch supervised the course for the Zoological Park. Usually the course is given twice a year, once during the spring term, and again in the fall. However, because of an oversight on the part of the Board of Education, the course was not announced in the Board's bulletin for the fall of 1953 and spring of 1954. Consequently the fall registration did not justify giving the course. It will be resumed in the spring of 1954.

Mr. Knobloch was again Chairman of the Zoological Park's Safety Committee.

Several new animal sounds were recorded on magnetic tape and added to our library of animal voices.

Miss Elizabeth Jacob left the employ of the Society on February 22 and Mrs. Ruth Manecke Gruber joined the department on February 16.

SUMMARY OF ATTENDANCE

ZOOLOGICAL PARK

<u>Month</u>	<u>1953</u>	<u>1952.</u>
January	47,457	66,396
February.	90,728	114,304
March	135,945	126,034
April	229,645	221,786
May	304,973	278,586
June.	230,194	258,939
July.	363,498	277,279
August.	318,762	323,654
September	240,744	231,562
October	204,091	195,256
November.	136,012	125,891
December.	58,411	51,295
	<hr/> 2,360,460	<hr/> 2,270,982

Total visitors from

November 9, 1899, to

December 31, 1953, 116,698,835

PUBLICATION AND PHOTOGRAPHY

William Bridges, Curator
Dorothy Reville, Assistant
Sam Dunton, Photographer

MOTION PICTURE PRODUCTION continues to dominate the activities of the Department of Publication and Photography, but the disproportionate amount of time given to film-making is bearing results, for in 1953 three films were completed, with music and narration, and are ready to be added to our library of films for educational distribution. In addition, another picture was made primarily for showing at the annual Members' meetings in January, and will subsequently be broken up for inclusion in other motion pictures. This latter concerned the new animals and the happenings of the year in the Zoological Park.

Now completed and awaiting listing and distribution by McGraw-Hill Company, which handles sales of our films, are "Introducing the Reptiles," 15 minutes; "Let's Look at Elephants," 16 minutes; and "Biologists in a Tropical Laboratory," 11 minutes. All are in color, 16 mm., with sound.

"Introducing the Reptiles" is designed as the first picture in a series of some twenty motion pictures to be produced in the next few years under the direction of Dr. Oliver. "Let's Look at Elephants" combines most happily the African footage made by Mr. Saul Blickman, one of our Members, and preliminary Zoo scenes made by Mr. Dunton. It is worth recording that Mr. Blickman has turned over to the Zoological Society some 3,000 feet of color motion pictures which he made on various trips to Africa, and has made funds available for the production of several educational films based on his material. Instead of gathering dust in his own film vaults, after the initial showings to his friends and associates, the film will be put to use and will reach a national audience through the schools.

"Biologists in a Tropical Laboratory" is the final edited version of the footage made in the spring of 1952 at Simla, Dr. William Beebe's Department of Tropical Research Laboratory in Trinidad.

Our collection of still photographs now numbers approximately 30,500 negatives, including 492 made last year by Mr. Dunton. We sold 1,290 prints and made 2,482 prints, 58 copy negatives, 46 slides, 9 transparencies and 44 X-ray negatives for our own purposes.

In the Printshop, Mr. Larsen produced 154 new animal labels, besides the usual large volume of reprints, and our presses struck off 287,606 impressions, mostly in form work.

A new edition of our Guide Book was published, our popular series publication on "The Platypus and Echidna" was revised and reissued, new sets of black-and-white and colored postcards were published for sale by Facilities and a new edition of the Map of the Zoo was issued.

In the spring Mr. Bridges and Mr. Dunton spent two weeks in Florida, with Dr. Oliver, in photography of alligators and the nesting of the Loggerhead Turtle. Mr. Dunton attended the convention of the Biological Photographic Association in Los Angeles, where one of his still photographs, "Tiger Swallowtail Caterpillar,"

won First Prize in a national competition. Another picture, of a Parasol Ant carrying a leaf, received Honorable Mention.

Eighteen papers were published in Zoologica, in a total of 204 pages. Volume 38 contained the following:

Part 1. April 27, 1953

1. Functional Anatomy and Evolution of Male Genitalia in Poeciliid Fishes. By Donn Eric Rosen & Myron Gordon. Plates I-IV; Text-figures 1-47.
2. A Case of Survival of a Goldfish Following the Loss of Its Tail. By C.M. Breder, Jr. Plates I & II.
3. The Effects of Thiourea Treatment Upon the Thyroid, Pituitary and Gonads of the Zebra Fish, Brachydanio rerio. By Joseph L. Scott, Plate I.
4. Body Temperatures of the Tuatara Under Natural Conditions. By Charles M. Bogert.

Part 2. September 15, 1953

5. The Amphibians and Reptiles of the Hawaiian Islands. By James A. Oliver & Charles E. Shaw. Text-figures 1-19.
6. Reproductive Behavior in Cyprinodon variegatus Lacepede, in Florida. By Edward C. Raney, Richard H. Backus, Ronald W. Crawford & C. Richard Robins. Plates I & II.
7. Tarletonbeania taylori, a New Lantern Fish from the Western North Pacific. By Giles W. Mead. Text-figure 1.
8. Spontaneous Neoplasms in Fishes. VII. A Spermatocytoma and Renal Melanoma in an African Lungfish, Protopterus annectens (Owen). By Ross F. Nigrelli & Sophie Jakowska. Plates I-IV; Text-figure 1.

Part 3. November 25, 1953

9. Revision of the Eastern Pacific Fishes of the Clinid Genus Labrisomus. By Clark Hubbs. Text-figures 1-9.
10. The Status of the Turtle Graptemys oculifera (Baur). By Fred R. Cagle. Text-figures 1-9.
11. A New Stathmonotid Blenny from the Pacific Coast of Mexico. By J. Bohlke. Text-figure 1.
12. Hematology of Normal and Melanomatous Fishes: A Preliminary Report. By Michel A. Glucksman & Myron Gordon. Plate I.
13. A Contribution to the Life History of the Euchromid Moth, Aethria carnicauda Butler. By William Beebe. Plates I & II.

Part 4. December 31, 1953

14. Construction and Operation of Butterfly Insectaries in the Tropics. By Jocelyn Crane & Henry Fleming. Plates I-V; Text-figures 1 & 2.
15. A Preliminary Study of Marsupial Relationships as Indicated by the Precipitin Test. By Courtney T. Wemyss. Text-figures 1-7.
16. The Pathology of Myxosporidiosis in the Electric Eel, Electrophorus electricus (Linnaeus), Caused by Henneguya visceralis and H. electrica, spp. nov. By Sophie Jakowska & Ross F. Nigrelli. Plates I-VI; Text-figures 1-4.
17. The Family Position of Neotropical Frogs Currently Referred to the Genus Pseudis. By Jay M. Savage & Antenor L. De Carvalho. Text-figures 1-5.

18. An Ophichthid Eel in the Coelom of a Sea Bass. By C.M. Breder, Jr. Plates I & II.

The Fifty-seventh Annual Report of the Zoological Society was published on May 5, and the six bi-monthly numbers of Animal Kingdom were issued.

ANIMAL BEHAVIOR

John V. Quaranta, Research Associate

RESEARCH IN ANIMAL BEHAVIOR - Work in Animal Behavior on a year-round basis was continued and extended during 1953. Opportunities for research were afforded once again to a number of educational institutions throughout the city. Dr. William Etkin, Associate Professor of Zoology at the City College of New York, made progress in his observations on socialization in the Indian Blackbuck. A number of significant relationships have begun to emerge concerning aggressive and sexual behavior in these animals. Dr. Yun Tsia and Dr. William Schoenfeld of the Department of Psychology of Columbia University visited the Zoological Park late in the year to consult with both Dr. Quaranta and Dr. James A. Oliver, Curator of Reptiles, on a project which they proposed for studying the visual sensitivities of tortoises. Students from Fordham University were given facilities for research under the supervision of the Rev. Franklin Ewing, S.J., Director of Research at Fordham University. Psychology majors from Manhattan College continued to assist Dr. Quaranta in carrying out research in animal behavior.

During the summer of 1953, Dr. Quaranta was appointed Chairman of the Department of Psychology at Marymount College and Director of Guidance. In this position, he enlisted members of the science faculty in research at the Zoological Park. Dr. Lillian Proietta, Professor of Biology at Marymount College, prepared a series of histological sections on the retinae of ducks. These findings were collated with physiological and behavioral observations made by Dr. Quaranta and presented as a paper before the Section of Zoology of the A.A.A.S. The President of Marymount College, Mother Sacre Coeur, R.S.H.M., also encouraged cooperative endeavors between the two institutions by allowing us to avail ourselves of the facilities and apparatus of the science departments. Also, during the year Dr. Quaranta met with Dr. C. R. Carpenter and Dr. J. P. Scott to discuss the organization of Behavior Research at the Zoo.

SUMMER RESEARCH - Prof. Julian Melhado of Western College, Ohio, was again appointed summer research fellow. He worked on the color vision of snakes, on the influence of early socialization deprivations upon maze learning in ducklings and on color generalization in a social situation.

COOPERATION WITH SCIENTIFIC SOCIETIES - Dr. Quaranta attended the annual meeting of the American Psychological Association, which was held in Cleveland during September. A proposal was also made to the A.P.A. to hold a sectional meeting of experimental and comparative psychologists at the Zoological Park during the month of September, 1954. This proposal was approved by the A.P.A. With Prof. Melhado, Dr. Quaranta attended the annual meeting of the American Association for the Advancement of Science in Boston in the latter part of December.

PAPERS PRESENTED BEFORE SCIENTIFIC SOCIETIES - Dr. Quaranta and Prof. Melhado presented two papers to Section I, American Society of Zoologists, on December 30, 1953:

"The generalization of incidentally learned color responses in a social situation."

"The influence of two different conditions of rearing on the maze learning of a mixed group of ducklings."

COMPTROLLER'S DEPARTMENT

Herbert F. Schiemann, Comptroller

BEHIND THE SCENES at the New York Zoological Park is an intriguing place, for here one can see Zoo creatures not elsewhere on exhibit. All that goes on behind the scenes, however, is not restricted to the exhibit buildings. To appreciate the myriad tasks necessary to operate our Zoo, one must visit the shops, storerooms, the commissary, kitchen, and, of course, the offices where so much of importance takes place.

A considerable portion of the office function obviously falls within the scope of the Comptroller's Department. We keep the books of account and prepare the financial statements which are necessary in the conduct of Zoo business. This department is, in a sense, a service organization within whose scope falls such work as the handling of payrolls involving anywhere from 250 employees in the winter to more than 500 in the busy summer months; the purchasing of thousands of items such as food for both human beings and animals, repair and maintenance supplies, equipment as small as a typewriter and as large as an automobile. Not only do we perform all the customary functions of a business office, but, in addition, many others that are peculiar to a Zoo. All of us who work in the busy Comptroller's Department get into the act and are understandably much occupied in rendering the kind of office service that a well-managed organization like the Bronx Zoo must have.

We wish to give our thanks to our loyal and efficient office staff who perform the multitudinous duties of the department.

CONSTRUCTION AND MAINTENANCE

Quentin Melling Schubert, Superintendent

THREE MAJOR PROJECTS were undertaken during 1953. Two of these were designed, constructed and supervised by Park Department Engineers. The first, dredging of Lake Agassiz, required removal of 5,000 cubic yards of silt from the lake bottom as well as all the debris which had accumulated over the years, washing down from the Bronx River. The second project included re-grading and widening the road from the Concourse Circle to the Bronxdale Gate and also re-surfacing the old Bronx River Road to the Buffalo Parking Field. When this is completed it will be possible to operate the Tractor Trains to the Bronxdale Parking Field and over this route to the Boston Road Gate Terminal. The third large project under way is the complete renovation of the Reptile House Interior. Designed by our architects, the work is being supervised by the architects and ourselves jointly. Because of the strike of the building material truckmen, this work was delayed nine weeks and therefore not completed in 1953 as planned.

Our own department designed and constructed a number of projects during the year, using some sub-contractors for the work. The Zoo Bar alteration, now completed, included the alteration of Rest Room and Toilet facilities for the waitresses.

A new exhibit was constructed in the Heads and Horns Building for the display of the Platypuses during the winter months.

Six new large maps of the Zoological Park were framed behind glass and installed near entrances to show special events.

A new drinking fountain incorporating a section of lead pipe from Pompeii was installed near the foot of the stairs at the Fountain Circle.

Upper front bars were removed from the Rhinoceros and Hippopotamus stalls. All bars were removed from in front of the Hippopotamus Pool, the floor of this pool re-surfaced, the stairs re-located, new heating coils installed and the heating boiler changed over to oil system to maintain a constant temperature of 65° in the water of this tank. The balance of work in this building is to be completed during the coming year.

The Hospital heating plant was changed to oil operation, assuring constant temperature throughout the day and night.

The Pheasant House roof was repaired and re-covered with new rubberoid roofing.

The Farm-in-the-Zoo was re-opened this season and extensive repairs were made, including new fences for Hog Yards, new Gate House located on River Road and all exhibits painted.

One of our old Tractor Trains was completely re-conditioned with new seats and tops and electric brakes installed. We plan to recondition two more trains in the coming year.

More than nine hundred small holes in asphalt pavement have been repaired by our own crew.

The Forestry Department planted six small trees around the perimeter of the Elephant Yards and one large 10" caliper Honey Locust Tree in the southeast yard. This department removed three hundred and ninety-four dead trees this year.

In addition to the above the departments executed 2,750 work orders in the past year.

FACILITIES DEPARTMENT

Edward Kearney, Manager of Restaurants

Edward Quinn, Assistant Manager

THREE new mobile trailer units were added to the fleet of food-vending installations in 1953, giving us a total of ten. The new units were installed at the Farm-in-the-Zoo, at Bronxdale Parking Field and at the Boathouse, and food service coverage was thereby much improved.

The Zoological Park's food service facilities now include the Commissary (stores and main kitchen), three self-service restaurants, one service restaurant seating 600 persons, five refreshment stands and ten portable units.

We are now finding that the present kitchen in the Service Area is becoming too small for efficient operation, and expansion of the floor space is now under study.

Souvenir sales continue to expand. Several years ago we adopted a policy of discontinuing slow-moving items and substituting a considerable variety of new ones, particularly in the low-price field. Sales have increased tremendously in the 15c, 20c and 25c price range--largely, it seems through purchases by school children.

Additional space in the Commissary building had to be found this past year for storage of souvenirs and servicing of the booths. The new space now gives us excellent working quarters.

MISCELLANEOUS OPERATIONS

AND SERVICES

CHILDREN'S ZOO - Under the efficient supervision of Mrs. Corrine Dalsgaard, the Children's Zoo opened its thirteenth season on April 4. When this ever-popular exhibit closed for the season on November 15, it had played host to 340,798 visitors. The revenue received from the Children's Zoo in 1953 exceeded that of any previous year.

RIDING TRACKS - A total of 219,800 rides were given by the Dromedaries, Llamas and donkeys under the capable supervision of Riding Track Master Henry Bartels.

Rides at the Pony Track under Ponymaster Edmond Foran numbered 178,385.

TRACTOR TRAINS - Rides numbered 531,071, as against 479,936 in 1952.

FARM-IN-THE-ZOO - The Farm-in-the-Zoo was open from May 16 to November 1. Because of construction on the Bronx River Parkway adjoining the Farm, it had not been open to the public since 1949.

The attendance of 79,107, including 15,067 children admitted free of charge as conducted groups, has only been exceeded once heretofore. In the 1943 season the attendance was 88,858; however that year an earlier opening and later closing date was possible and extended the season eight weeks longer.

As usual, calves and dairy cattle for the milking demonstration were provided through Trustee Warren Kinney.

During the winter months, Children's Zoo stock and tractor trains were quartered at the Farm in addition to the basic farm sheep, cattle and poultry breeding stock.

Eggs were supplied for custards for the Duck-billed Platypuses and other foodstuffs were supplied to the Facilities Department Commissary.

Production at the Farm was: Wool, 163 pounds; pork, 3,880 pounds; lamb, 323 pounds; poultry, 905 pounds; eggs, 692 dozen; calves, two.

THE AQUARIUM

Christopher W. Coates, Curator and Aquarist
James W. Atz, Assistant Curator
Ross F. Nigrelli, Pathologist
Myron Gordon, Geneticist

ON OCTOBER 22 the Board of Estimate of the City of New York approved an agreement to start, as soon as possible, construction of the first stage of the new Aquarium. This agreement had previously been approved by the Board of Trustees of the New York Zoological Society. Thus, after twelve years, the new Aquarium is about to become a reality. The importance of this development to us cannot, of course, be overestimated.

The Aquarium is to be located at Coney Island, Brooklyn. The first stage, which will cost an estimated nine hundred thousand dollars, includes one of the large outdoor pools and a portion of one of the interior exhibition halls. New financial estimates have had to be made and the architectural plans revised, the preparation of which has involved a good share of the efforts of Curator Coates.

The new labels, upon which we have worked for more than a year, were installed in the spring in our Aquarium exhibit in the Zoological Park. Response to them has been favorable, and observation of our visitors has shown that these illustrated labels do make it possible for the layman to identify fishes, even when there are as many as a dozen kinds in a single tank. In January, a new water system was put into operation; we are now equipped with two relatively large freshwater circulations.

The Casting Pool has completed its first year of operation. Under the supervision of Curator Coates, it opened on May 16 and closed on November 1. For the first four months the Pool was operated solely for casting, but subsequently it functioned both as a place where adults could practice casting and where children could fish. Casters had to pay a small fee, but children were allowed to fish without charge. These particular arrangements were dictated by the necessity of not conflicting with the game laws of New York state. To provide fish for the Pool, the Aquarium's crew collected nearly 4,500 sunfishes from the Wildfowl Pond and several score of Carp and Bullheads. Although the Casting Pool proved very popular with junior anglers, the response of local casters was quite disappointing.

Since the fall of 1941, when the old Aquarium building in Battery Park was closed down, the bulk of the Aquarium's library had been stored in the basement of the Administration Building of the Zoological Park, with scatterings of it in other places. This obviously unsatisfactory state of affairs was at least partially remedied by repacking the records, manuscripts, books and other publications so that they could be placed in storage in a first class warehouse. During the course of this operation, the entire library was reexamined and sorted by Mr. Atz with a view toward separating out a nucleus working collection, which is being kept in our office and laboratory. In all, nearly five hundred cubic feet of material were sent away for storage.

We have continued to collect and maintain the earthworms, crayfish and frogs that are the principal items of food of the Duck-billed Platypuses. The great increase in appetite shown by the female, "Penelope," during her supposed period of reproduction made this task more difficult than usual.

EXHIBITIONS - A number of tropical freshwater fishes new to our collections were obtained during the year. The outstanding new species acquired by purchase were the Lamp-Eye Rasbora (Rasbora dorsiocellata), Chola Barb (Barbus filamentosus), Mahout's Chela (Chela mahouti), Red-finned Labeo (Labeo erythrus), Tummy (Leporinus arcus), Rough-scaled Characin (Bario steindachneri), Golden Tetra and so-called Corydoras lineatus. From Mr. Joseph R. Armstrong we received a specimen of Butter Catfish (Ompok bimaculatus), and from Mr. Joseph Mintzer an additional specimen of Tummy.

Other noteworthy acquisitions include the Large-mouth Featherback (Notopterus chitala), Spotted Pyrrhulina (Pyrrhulina vittata), Chocolate Characin (Mimagoniates barberi) and a Gobioides. From Mr. Armstrong we also received a specimen of Haimara (Hoplias malabaricus).

Although it is very difficult for us to exhibit marine life because of the lack of a supply of sea water, we do show seahorses, which are probably the most popular of marine fishes, whenever possible. A shipment of European Long-nosed Seahorses (Hippocampus guttulatus) arrived in New York in early fall, and for a while we were able to exhibit this form. Mr. Mintzer also donated to us some small fishes collected by him on local shores, including a Toadfish (Opsanus tau).

RESEARCH - Discoveries were made in all three of our principal research endeavors, that is, in the electrophysiology of fishes, the genetics and evolution of the platyfishes and swordtails and the causes of death of fishes, especially abnormal growths such as tumors and cancers. Although none of these advances was what might be called revolutionary, each opens up new vistas of investigation that should occupy us for some time to come.

After many years of studying the Electric Eel, Curator Coates and his collaborators from the College of Physicians and Surgeons have turned their attention to other members of the Family Gymnotidae, to which this fish belongs. It has been found that at least three other gymnotid eels possess electric powers, but that these are so weak that they cannot be detected without the aid of sensitive instruments. Nevertheless, the fishes' electric discharges seem to serve a most utilitarian purpose, that of providing them with information about their environment. It may well be that all the members of the Family Gymnotidae possess the ability to discharge electricity into the water surrounding them. On the basis of this new information, the evolution of the powerful electric organs of the Electric Eel becomes much more apparent.

New causes of death of fishes are periodically turned up by Dr. Nigrelli, but his discovery that a certain mite, belonging to the genus Histiostoma, produced a substance extremely toxic to fish was entirely unexpected. In fact, mites of that genus have never before been known to live in water, all its members previously having been recorded from damp, terrestrial habitats.

Rickettsia, those tiny disease-producing entities that occupy a position between bacteria and viruses, have never been considered a factor in the death of fishes. Only one instance had ever been recorded, in a single specimen of Egyptian freshwater fish. In the course of the numerous autopsies performed in our laboratory each year - on fishes from several sources beside our own collections - several diseased Guppies (Lebistes reticulatus) and American Eels (Anguilla rostrata), whose lesions contained rickettsial-like organisms, have been found. Microscopically these intracellular bodies appeared and behaved like true rickettsia, but final proof of their identity awaits successful culturing.

An exciting new development in the Genetics Laboratory is the discovery of a definite relationship between the kidney and thyroid tumors that regularly afflict certain strains of fishes maintained there. A study of the kidney tumors was begun by Miss K. France Baker of the Laboratory in an effort to find out what was causing the high incidence of edema in certain genetic lines of platyfishes and swordtails. Microscopic study indicated that cells very much like those typically found in the thyroid gland were present in the diseased kidneys. This observation has recently been confirmed by the use of radioactive iodine, for which thyroid cells have a strong affinity. It has also been found that fishes with tumorous kidneys invariably show abnormal thyroid glands. In addition to Dr. Gordon and Miss Baker, Dr. Nigrelli and Drs. Aubrey Gorbman and Olga Berg of Columbia University are bringing their talents to bear on the problem in a concerted effort to reveal just what is the relation between the kidney and thyroid diseases.

Since the Platyfish (Xiphophorus maculatus) is probably the most polymorphic of all vertebrates known, a study of this species should reveal facts of particular interest to genetically-minded students of evolution, to whom the phenomenon of polymorphism has always presented critical problems. More than 150 different fixed color patterns have been found among the ten thousand or so Platyfish that have been collected in all the river systems in which the species occurs. Dr. Gordon and Mr. Hugh Gordon, a mathematician of Columbia University, have been analyzing the genetical and ecological data obtained during the past quarter of a century in an effort to discover how this extreme diversity of color pattern arose and how it maintains itself. Recently the eminent physiologist and biometrician, Dr. J.B.S. Haldane of University College, London, has begun a complementary analysis of the situation.

From the National Cancer Institute, National Institutes of Health of the U.S. Public Health Service, we received \$17,200 in support of the research of our Genetics Laboratory, which, under the direction of Dr. Gordon, is dealing with the problem of abnormal growths in fishes. A similar amount has also been granted us for the year 1954. Our Laboratory is located in the Whitney Wing of the Department of Birds of the American Museum of Natural History, whose facilities continue to be made available to us in a most generous manner. This year, for example, a dark room was completely reconstructed and made available to Dr. Gordon.

With Dr. Grace E. Pickford of the Bingham Oceanographic Laboratory, Assistant Curator Atz is engaged in the preparation of a complete review of the pituitary physiology of fish. It is believed that this analytical compendium will be of con-

siderable help to fish culturists and perhaps to conservationists, as well as to endocrinologists and ichthyologists.

COLLABORATION - If the adage about building better mousetraps holds for aquariums, it would seem that we do indeed have something special to offer those who are planning to build places for the exhibition of aquatic animals and plants. From all parts of the world people continue to seek our advice on the building and operating of proposed aquariums - this year from Pontevedra, Spain; Bergen, Norway; Puerto Rico; Vancouver, British Columbia; Montreal, Quebec; San Diego, Long Beach and Portuguese Bend, California; Fort Worth, Texas; Pittsburgh and Philadelphia, Pennsylvania; and Atlantic City, New Jersey.

Technical advice on the construction and maintenance of tanks and water systems was provided the School of Tropical and Preventive Medicine of the College of Medical Evangelists at Loma Linda, California; the New Jersey Agricultural Experiment Station at Rutgers University, the Architecture Library of the University of Texas, the Quebec Biological Bureau and the Universities of Georgia and North Carolina. Living animals or plants were given to the Moody Institute of Science, the Botany Department of the Brookhaven National Laboratory, the Long Island Agricultural Experiment Station of the U.S. Department of Agriculture and Cornell University, the Department of Biology of Yeshiva University, the University of Chicago, the Zoological Society of London, the Staten Island Zoological Society, the Chicago Zoological Society and the Steinhart Aquarium. Special assistance was given to the Naval Medical Research Institution, the Office of Naval Research and the Echo Corporation, all of which are interested in the Electric Eel. The U.S. National Park Service received information on the old Aquarium building in Battery Park and also, from Curator Coates, the hand-wrought iron lock salvaged from the original doors of the place. As in previous years, we have cooperated with the Department of Marine and Aviation, New York City; the Federal Security Agency, Pure Food and Drug Administration; the Department of Health, New York City; Fish and Wildlife Service, Department of the Interior; and the Conservation Department, State of New York.

Collaborators working with the Aquarium during the year were:

- Drs. David Nachmansohn, Mario Altamirano-Orrego, Harry Grundfest, Irwin B. Wilson, C-Y. Kao and Walter Schleyer, Department of Neurology, College of Physicians and Surgeons, Columbia University
Dr. M. Vertner Brown, College of the City of New York
Drs. Horace W. Stunkard, Harry Charipper and Milan J. Kopac, New York University
Dr. Eli D. Goldsmith, New York University Dental College
Dr. Aubrey Gorbman, Barnard College, Columbia University
Dr. Sophie Jakowska, College of Mount St. Vincent, New York
Dr. Alfred Perlmutter, Conservation Department, State of New York
Dr. James R. Westman, New Jersey Agricultural Experiment Station, Rutgers University
Dr. J.B.S. Haldane, University College, London
Dr. Recai Ermin, University of Istanbul
Misses Francesca LaMonte and Priscilla Rasquin, Drs. Charles M. Breder, Jr., Lester R. Aronson and T.C. Schneirla, American Museum of Natural History.

Drs. Daniel Merriman and Grace E. Pickford, Bingham Oceanographic Laboratory, Yale University
 Drs. Caryl P. Haskins, Seymour Hutner, Paul A. Zahl and Luigi Provasoli, Haskins Laboratories, New York
 Dr. Carl L. Hubbs, Scripps Institution of Oceanography
 Dr. Olga Berg, Research Associate, Barnard College, Columbia University
 Mr. Morton Padnos, Protista Laboratory, New York
 Mr. Hugh Gordon, Columbia University
 Dr. Samuel Bieber, Wellcome Research Laboratories, Tuckahoe, New York
 Dr. Helen Vishniac, Queens College and Haskins Laboratories
 Dr. Abner I. Weisman, Jewish Memorial Hospital and New York Medical College
 Dr. Alfred Angrist, Jewish Memorial Hospital and Queens General Hospital

In the Graduate School of Arts and Sciences of New York University, Drs. Nigrelli and Gordon presented their courses on fish diseases and fish genetics, respectively. Messrs. Thomas J. King and Sheldon Aaronson received their Doctor of Philosophy degrees under the sponsorship of Dr. Nigrelli, while Miss Jean Copperthwaite and Mr. Alan Rubin received their Master of Science degrees under Dr. Nigrelli and Dr. Gordon, respectively. The following candidates are at present working under Drs. Nigrelli or Gordon for advanced degrees from New York University:

Mr. James W. Atz, New York Zoological Society
 Mrs. Sylvia Greenberg
 Miss Patricia Kadow, College of Saint Elizabeth, Morristown, New Jersey
 Mr. Klaus D. Kallmann
 Mr. Theodor R. Marcus, Veterans' Administration Hospital, Kingsbridge Road, Bronx, New York
 Mr. George S. Pappas, Iona College, New Rochelle, New York
 Mr. Alfonso N. Petrocci, Onyx Oil and Chemical Company, Jersey City
 Mr. Henry Vogel, New York City Department of Health
 Mr. Marvin Weinstein, Squibb Pharmaceutical Company, Inc.

PUBLICATIONS - The following scientific and popular articles by members of the staff appeared during the year:

Mr. Coates

Dermogenys pusillus the Halfbeak. Fish Culturist, Vol. 32, No. 5, pp. 33-34.
 New York Plans New Aquarium. All-Pets Mag., Vol. 24, No. 2, pp. 137-139, 142.
 Bluefish. Encyclopedia Americana, Vol. 4, pp. 129-130.
 Dipnoidea. Encyclopedia Americana, Vol. 9, p. 141.
 Red Rasbora Proves a Showy Little Pet. Fish Culturist, Vol. 32, No. 9, p. 67.
 Barbus oligolepis (Bleeker), Fish Culturist, Vol. 32, No. 10, p. 73.
 The Theory and Practice of Cleaning Home Aquaria. Indian Aquarist (Bombay), Vol. 1, No. 1, pp. 4-6, 32.
 Shad. Encyclopedia Americana, Vol. 24, pp. 636-637.

- Trout. Encyclopedia Americana, Vol. 27, pp. 96-97.
- Fish Can Stand Winter in Most Garden Pools. Fish Culturist, Vol. 33, No. 3, p. 19.
- Mechanisms of Bioelectric Activity in Electric Tissue. I. The Response to Indirect and Direct Stimulation of Electroplaques of Electrophorus electricus. With Mario Altamirano, Harry Grundfest and David Nachmansohn. Jour. Gen'l Physiol., Vol. 37, No. 1, pp. 91-110.
- Temporal and Spacial Facilitation of Neurally Excited Electroplax of Electric Eel. With Mario Altamirano-Orrego, Harry Grundfest, C-Y. Kao and David Nachmansohn. Federation Proc., Vol. 12, No. 1, p. 4. Abstract.

Mr. Atz

- All Goldfish Are Not Gold. Animal Kingdom, Vol. 56, No. 1, pp. 27-29.
- Fish at Home. Pennsylvania Angler, Vol. 22, No. 2, pp. 2-5, 26-27
- Orientation in Schooling Fishes. (American Museum of Natural History and Office of Naval Research) 16 pp. Mimeo.
- Fishes Come in White, Too. Animal Kingdom, Vol. 56, No. 2, pp. 51-55.
- An Unnatural Natural Habitat. Animal Kingdom, Vol. 56, No. 3, pp. 73-75.
- Cichlids and Geography. Part I. Salt Water Cichlids. Aquarium Journ., Vol. 24, No. 12, pp. 290-296.

Dr. Nigrelli

- The Fish in Biological Research. Trans. N.Y. Acad. Sci., Ser. II, Vol. 15, No. 6, pp. 183-186.
- Two Diseases of the Neon Tetra, Hyphessobrycon innesi. Aquarium Journ., Vol. 24, No. 9, pp. 203-208.
- Preliminary Studies of Menhaden and their Mass Mortalities in Long Island and New Jersey Waters. With James R. Westman. Proc. Northeast Div. Amer. Fish. Soc. 1953, 12 pp. Mimeo.
- Spontaneous Neoplasms in Fishes. VII. A Spermatocytoma and Renal Melanoma in an African Lungfish, Protopterus annectens (Owen). With Sophie Jakowska. Zoologica, Vol. 38, part 2, pp. 109-112.
- The Pathology of Myxosporidiosis in the Electric Eel, Electrophorus electricus (Linnaeus), Caused by Henneguya visceralis and H. electrica spp. nov. With Sophie Jakowska. Zoologica, Vol. 38, Part 4, pp. 183-191.
- Studies on Colpoda. II. The Morphology and Cytology of Aged Corrugated Resting Cysts of Colpoda maupasi (Bensonhurst Strain) Kept in Cultures up to Four Years. With Morton Padnos and Sophie Jakowska. Proc. Soc. Protozoologists, Vol. 4, p. 18. Abstract.
- Studies on Colpoda. III. Effects of Low Temperature on Reproductive Cysts of Colpoda maupasi (Bensonhurst Strain). With Morton Padnos and Sophie Jakowska, Proc. Soc. Protozoologists, Vol. 4, p. 18. Abstract.
- Preliminary Studies of Menhaden and their Mass Mortalities in Long Island and New Jersey Waters. With James R. Westman. Minutes and Appendices, 12th Ann. Meeting Atlantic States Marine Fisheries Comm., p. 135. Mimeo. Abstract.

- Localized Responses in Fish to Experimental Inflammation Caused by Pathogenic Bacteria. With Sophie Jakowska. Anat. Rec., Vol. 117, No. 3, p. 526. Abstract.
- Rickettsia-like Infection in *Lebistes reticulatus* and Macrophage Response. With Sophie Jakowska. Anat. Rec., Vol. 117, No. 3, pp. 650-651. Abstract.

Dr. Gordon

- Hereditary Influences in Melanoma Development. Texas Rpts. Biol. and Med., Vol. 10, No. 4, pp. 987-995. (1952).
- Inheritance in Fishes. Parts 3 - 4. Aquarium Journ., Vol. 24, Nos. 1-2, pp. 13-19, 38-46.
- The Use of Fishes in the Evaluation of Heredity in Atypical Pigment Cell Growth. Trans. N.Y. Acad. Sci., Ser. II, Vol. 15, No. 6, pp. 192-195.
- Back to Their Ancestors. Aquarist and Pondkeeper, Vol. 18, No. 1, pp. 10-14. Aquarium Journ., Vol. 24, No. 8, pp. 175-183.
- Inheritance in the Guppy. Aquarium Journ., Vol. 24, Nos. 5-6, pp. 105-112, 113-136. Aquarist and Pondkeeper, Vol. 18, No. 3, pp. 46-51.
- The Fish that Like to Fight. Animal Kingdom, Vol. 56, No. 4, pp. 114-118.
- A Loan Repaid with Interest. The Aquarium, Vol. 22, No. 8, pp. 228-230.
- The Ecological Niche of the Pigmy Swordtail, Xiphophorus pygmaeus, in the Rio Axtla, Mexico. Copeia, Vol. for 1952, No. 3, pp. 148-150.
- A Mexican Platy Became the Turkish Black Fury. Indian Aquarist (Bombay), Vol. 1, No. 1, pp. 21-22.
- Heredity in Siamese Fighting Fish. Aquarist and Pondkeeper, Vol. 18, Nos. 6-7, pp. 110-113, 131-132.
- Inheritance of Albinism in the Paradise Fish. Aquarium Journ., Vol. 24, No. 10, pp. 245-246.
- The Wagtail Platy. The Aquarium, Vol. 22, No. 10, pp. 283-284.
- Honduras Story. Tropical Fish Hobbyist, Vol. 2, No. 1, pp. 12-17; 30.
- In the Footsteps of Lieutenant Couch. Animal Kingdom, Vol. 56, No. 6, pp. 173-175.
- The Legendary Albino Fighting Fish. Tropical Fish Hobbyist, Vol. 2, No. 2, pp. 20-22.
- Progressive Growth Stages in the Development of Spontaneous Thyroid Tumors in Inbred Swordtails Xiphophorus montezumae. With Olga Berg and Martha Edgar. Cancer Res., Vol. 13, No. 1, pp. 1-8.
- Relationship of Atypical Pigment Cell Growth to Gonadal Development in Hybrid Fishes. With Olga Berg. pp. 43-72 of "Pigment Cell Growth." Academic Press, New York.
- Functional Anatomy and Evolution of Male Genitalia in Poeciliid Fishes. With Donn Eric Rosen. Zoologica, Vol. 38, Part 1, pp. 1-47.
- Effects of Alpha-estradiol benzoate and methyl testosterone upon the platyfish, Xiphophorus maculatus skeleton. With Alan M. Rubin. Proc. Soc. Exper. Biol. and Med., Vol. 83, No. 3, pp. 646-648.
- Hematology of Normal and Melanomatous Fishes: A Preliminary Report. With Michel A. Glucksman. Zoologica, Vol. 38, Part 3, pp. 151-154.

Thyroid Drugs that Control Growth of Goiters in Xiphophorin Fishes. With Olga Berg. Proc. Amer. Assoc. Cancer Res., Vol. 1, No. 1, p. 5. Abstract.

Genetics of the Sc Transplantable Melanoma in Xiphophorin Fishes. With Theodor R. Marcus. Proc. Amer. Assoc. Cancer Res., Vol. 1, No. 1, p. 36. Abstract.

Preliminary Studies of the Differential Susceptibility of Various Strains of the Platyfish to a Kidney Tumor. With K France Baker. Genetics, Vol. 38, No. 6, p. 655. Abstract.

PERSONNEL - Mr. Coates was reappointed Chairman of the Aquarium Committee of the American Association of Zoological Parks and Aquariums and Research Associate in the Department of Fishes and Aquatic Biology at the American Museum of Natural History. Mr. Atz was elected Fellow of the New York Zoological Society and member of the Board of Governors of the American Society of Ichthyologists and Herpetologists. For the annual meeting of that organization, the sessions of which were held at the American Museum and the Zoological Park, members of the Aquarium's staff served on the local committee, Dr. Nigrelli being its chairman.

Dr. Nigrelli served as Councilman of the New York Academy of Sciences and was elected Recording Secretary for the coming year. He was reappointed Scientific Consultant in the Bingham Oceanographic Laboratory. Dr. Nigrelli organized a symposium, sponsored by the Academy, on The Fish in Biological Research. He continued to act as coordinator of civilian defense within the Zoological Park, serving as Deputy Zone Commander. Dr. Gordon was reappointed Research Associate in the Department of Animal Behavior at the American Museum of Natural History. Dr. Gordon travelled to Europe, where he presented papers at the International Congresses of Zoology and Genetics.

After thirty-one and one-half years of notable service, Mr. Thomas Howley retired. During this time he served as Fish Culturist, Tankman and Laboratory Assistant, as well as expert in rockwork decoration of tanks and other construction matters. For the past two and one-half years he was Secretary of the Zoological Park's Safety Committee, a position he filled with distinction.

Members of the staff gave papers, lectures and demonstrations, and participated in discussions at the following institutions and places:

Fourteenth International Congress of Zoology, Copenhagen, Denmark

Ninth International Congress of Genetics, Bellagio, Italy

Nineteenth International Physiological Congress, Montreal, Canada

Federation of American Societies for Experimental Biology, Chicago meeting

American Association for Cancer Research, Chicago meeting

American Society of Zoologists, Boston meeting

Genetics Society of America, Boston meeting

Society of Protozoologists, Madison meeting

American Society of Ichthyologists and Herpetologists, New York meeting

American Fisheries Society, Milwaukee meeting

Northeast Division of the American Fisheries Society, Bretton Woods meeting

Atlantic States Marine Fisheries Commission, New York meeting
American Association of Zoological Parks and Aquariums, Denver
meeting
Greater New York Safety Council, twenty-third annual meeting
Detroit Institute of Cancer Research Sixth Annual Scientific
Meeting
New York Academy of Sciences, symposium on the fish in
biological research
Office of Naval Research and American Museum of Natural
History, symposium on orientation in animals
Department of Biology, Washington Square College, New York
University
Department of Zoology, University of North Carolina
Aquarium Society of America
Aquarium Society of New York
Aquarist and Pondkeeper lectures at Glasgow, Newcastle,
Sheffield, Birmingham, Manchester and London
Ten Mile River (N.Y.) Boy Scout Camp
Kiwanis Club of West Hudson, New Jersey
New York-New Jersey Middlebury College Alumni Association
Station WEVD

DEPARTMENT OF TROPICAL RESEARCH

William Beebe, Director Emeritus
Jocelyn Crane, Assistant Director
Henry Fleming, Entomologist
Rosemary Kenedy, Field Assistant

GENERAL ACTIVITIES OF THE YEAR - In 1953 we spent six months in the field, at Simla, the Zoological Society's Trinidad Station, and at Moengo, Surinam. The remainder of the year we worked in our laboratory in the Zoological Park. This year's report extends from November 14, 1952, through November 12, 1953.

CHANGES IN STAFF - The only change was the temporary addition of Mr. Guy Neale, as scientific artist, for the present season. Mr. Neale made a number of large paintings of wild life which were exhibited at the Spring Garden party of the Society.

FIFTY-FIRST EXPEDITION - This expedition took us through the fourth season of occupancy of Simia and St. Pat's as a permanent Zoological Society Field Station. We left New York on the Alcoa-Pointer on November 14, 1952, and flew north by Pan-American plane on May 15, 1953.

The route taken on the trip south covered San Juan, Puerto Rico; Charlotte Amalie, St. Thomas; Fort-de-France, Martinique; Caripito, Venezuela; Georgetown, British Guiana; Paramaribo and Moengo, Surinam, and Port-of-Spain, Trinidad.

The stop at Georgetown was the first return to this colony in twenty-eight years, since 1924 when the Department's station at Kartabo was closed. Here we revisited the wonderful Botanic Garden, with its heronries, manatees and Victoria Regia. There is now, in Georgetown, a small but well-planned zoo. We reached Simla on December 2.

TRANSFER OF SIMLA AND ST. PATRICK'S ESTATES - The transfer of Simla and St. Patrick's estates, comprising two hundred acres, was effected, a gift from Dr. Beebe to the New York Zoological Society.

GIFTS - Generous contributions to the work of the Department were received from Mr. Robert G. Goelet, and, through the channel of an Explorers' Club grant to Dr. Beebe, from Mr. Redfield Vose. Thanks to them, the April trip to Surinam was made possible, Mr. Neale was engaged as scientific artist for the season, and the guest suite underneath the photographic laboratory was completed. Once again we wish to express our appreciation to the Alcoa Steamship Company for its generous support in all problems of transportation. To it also, and to the Surinaamsche Bauxite Maatschappij, go our hearty thanks for their cooperation during the Surinam trip. Welcome gifts from Mr. and Mrs. Warren Kinney, Dr. Parks McCombs and Mrs. Wilbur G. Downs were used for the purchase of laboratory and photographic equipment.

HONORS - The Ernst Leitz Optical Works presented Dr. Beebe with Leica camera Number 600,000 in appreciation of his many years' work in photography. In November, Dr. Beebe was the recipient of the Theodore Roosevelt medal for Distinguished Service in Science.

LECTURES - The usual symposia were held during the year at Simla for students of the Imperial College. We were asked by His Excellency the Governor to show color movies and give a talk at Government House in honor of Her Royal Highness, the Princess Royal.

WEATHER - The precipitation for the year 1953 at Simla was somewhat below average, being 91.03 inches as compared with the five-year average of 108.10 inches. Notable events were two rather severe earthquakes in February and March, which awakened and terrified birds and monkeys.

VEGETATION - The dominant change during our absence was in the intense growth of all jungle vegetation. In the short space of six months seedlings became saplings, bushes changed to shrubs, twigs to branches and small trees to lofty ones. Another example was the ratio of weight of one to five thousand, from grapefruit blossom to ripened fruit. A botanist must deal with activity as well as growth. We had to cut down eight full-grown trees which threatened to shut out our view north up the valley.

CONSERVATION - General conditions of government conservation were excellent. Shooting laws were, on the whole, well enforced, and bird and animal life seemed to be holding its own. The only exception which came to our attention was in Tobago, where, as a result of reports of injury to new-planted corn, five thousand Caciques or Giant Orioles were shot without a single stomach examination being made. There is no doubt that these birds are beneficial.

RELATION WITH INSTITUTIONS - One of the most satisfactory events for our Simla Station was the close association with the Trinidad Regional Virus Laboratory of the Rockefeller Foundation. With the cooperation and initiative of the Director, Dr. Wilbur G. Downs, we provided the Virus Laboratory with accommodation for a Field Station in St. Pat's cottage. In our absence the laboratory staff continued our records and cared for our big binoculars and other delicate instruments in their air-conditioned, cold storage and humidity-free rooms. In the course of their mosquito and virus work they carried on trapping of animals and built lofty observation platforms in trees, both of which benefit our records. In every way the relationship with our sister Institution was reciprocal and satisfactory.

Our relations with the Trinidad government, with the Alcoa Steamship Company and the United States Naval Base continued cordial, as always.

CONSTRUCTION - In 1953 our guest suite was completed; new electrical leads installed for the generator house; inside of house painted; maids' quarters repaired; boundary lines through jungle recut and experimental pool constructed. The latter is ten by fifteen feet and has already proved satisfactory for water hyacinths, water lilies, sedges, cichlids, guppies and snails,

to say nothing of dragonfly larvae, water-striders and masses of toad and frog spawn. Eventually, the pool should prove of great value for tropical, aquatic, biological research.

VISITORS - Some of the more important visitors were Dr. J.M. Valentine of the University of North Carolina whose specialty was ground beetles; Admiral Sir Eric and Lady Fullerton; Mr. and Mrs. Copley Amory of Boston; Mr. and Mrs. Sherman Haight; Mr. Richard Farrelly and his daughter, Mrs. Wick; Mr. and Mrs. William White; Mr. and Mrs. Eustace Seligman; Captain Day, head of the Naval Base, and Mrs. Day; Mr. Thornton Burgess and the Hon. E.W.D. Tennant, who presented us with a new type of tropical net, with an eighteen-foot, jointed, aluminum handle. Dr. Mason of the Naval Base visited us and made a tape record of the sounds of living creatures, including Elf Owls, Anis, Kiskadees and Howling Monkeys. We entertained the Hon. Fletcher Warren, Ambassador to Venezuela, and Mrs. Warren and we had the pleasure of having Mr. Peter Grimm with us for a week. Mr. and Mrs. George J. Muller visited us and presented the Society with a pair of the extremely rare St. Vincent Amazon Parrots (Amazona guildingi).

SCIENTIFIC ACTIVITIES - Continuation of the phenological survey of the Arima Valley, both botanical and zoological, including the relative abundance of the most common species during every month with their blooming and breeding seasons; geographical variation in the social behavior of selected species of crabs, spiders, butterflies and birds, their activities in Trinidad being compared with those of the same species previously studied in Tobago, Venezuela, British Guiana and Surinam; spectroanalysis of the pattern and pigments of butterflies, in the visible and ultraviolet, as a foundation for work on their social behavior; experimental study of the adaptive significance of color in the behavior of Heliconius and Papilio butterflies; comparative study of innate adaptive behavior in newly hatched Lepidoptera; comparative study of innate releasing mechanisms of feeding, flocking and defense in butterflies; extra-breeding activities of caciques and cowbirds, with special reference to the first intimation of breeding behavior; intensive collecting and study of behavior and life-histories of the day-flying moths, Euchromidae.

TRIPS - We spent from the sixth to the twenty-sixth of April in Surinam, at the headquarters of the bauxite mines at Moengo. One object was to understand the great variation in certain heliconid butterflies, with the aim of ascertaining whether these are legitimate species or sub-species, or are all derived from the eggs of single individuals. Collections were made of many forms, kept alive and a few brought back to Simla. None of these proved to be fertile females. More important was the data obtained on the behavior of Surinam birds and butterflies, compared with that of the same species in Trinidad.

PUBLICATIONS - Twelve contributions relating to the Department were published in 1953.

CONTRIBUTIONS - 1953

- 932-Annual Report of the Department of Tropical Research for 1952. William Beebe. Pp. 50-55.
- 933-The Seeing Eye. Fairfield Osborn. Animal Kingdom, Vol. 56, No. 2, p. 33.
- 934-On a Rainy Day in Simla. William Beebe. Animal Kingdom, Vol. 56, No. 2, pp. 45-47
- 935-Trinidad Valley Enriches World Science. Trinidad Guardian, May 19.
- 936-A Contribution to the Life History of the Euehromid Moth, Aethria carnicauda Butler. William Beebe. Zoologica, Vol. 38, No. 13, pp. 155-159.
- 937-Construction and Operation of Butterfly Insectaries in the Tropics. Jocelyn Crane and Henry Fleming. Zoologica, Vol. 38, No. 14, pp. 161-172.
- 938-William Beebe o della Curiosita. Antonio Lugli. Scena Illustrata, Rome, June, 1953.
- 939-Six-hundred-thousandth Leica. Leica News, Vol. 6, No. 3.
- 940-Undersea Scientist Films Beetles. New York Journal-American, July 26.
- 941-Moths Are Fascinating. Virginia Clair. Standard-Star, New Rochelle, July 25.
- 942-On the Thread of Social Relations. William Beebe. Animal Kingdom, Vol. 56, No. 4, pp. 109-110.
- 943-Unseen Life of New York. Duell, Sloan and Pearce - Little, Brown and Company. November. i-xiii, 1-165

MEMBERSHIP

Donald T. Carlisle, Chairman
Membership Committee

SOCIETY MEMBERSHIP during 1953 held about level with the preceding year. There was a slight decline in new annual members and a substantial increase in those of contributing status. Contributing memberships now comprise 29% of all those paying yearly dues, a gain of some 3.5% over 1952. This gain in contributing memberships accounts for the fact that, while there was a net decline of 16 dues-paying memberships for the year, yearly dues reached an all-time high of \$45,370. Life memberships declined by 6 during 1953.

The gratifying upward swing in contributing memberships must surely indicate the great loyalty of our members and their interest in the Society's work.

Early in 1953 a more aggressive membership promotion was planned, but first returns seeming to show that an increase in promotional expense would not produce a proportionate return, plans were therefore modified, and the cost of maintaining membership was reduced as against the expenditures of the preceding year. We were thus able to increase our dues for the year with a decrease in costs.

During 1953 a number of efforts were initiated to increase our mailing-lists by reaching out into new prospect fields. The results of these efforts carry over into the new year. One ever-surprising fact is that there are so many people who would like to join, but do not know that they are welcome. The problem of reaching these people is one of importance. A small question-and-answer booklet about the Society was distributed in November and is still bringing in good returns in the second month of the new year.

One highly successful means of gaining new members has been the Zoo parties arranged for clubs and organizations. The University Club has been coming to the Zoo every year for more than a decade, and its party now numbers more than 200 persons. The Coffee House Club had a spring party at the Zoo, and asked for a second one in the fall. The Century Association held a Zoo-party for the first time in the spring of 1953. We are expecting to add more organizations to this list in the coming year.

As in the past, present members are about the best source of prospect names and we continue to urge all members to send in the names and addresses of their friends. Members are urged to let their friends know that the privileges of the Zoo will be extended to the Aquarium when the latter comes into being - the pleasures of two great institutions at the single dues cost.

SUMMARY OF MEMBERSHIP

Benefactors	6
Founders in Perpetuity.	13
Founders.	15
Associate Founders.	6
Patrons	26
Life Members.	374
Contributing Members.	741
Annual Members.	1,810
Honorary Members.	2
Fellows	85
Research Associates	2
Corresponding Members	10
Total	<u>3,090</u>

Corrected to January 1, 1954

THE CONSERVATION FOUNDATION

THE CONSERVATION FOUNDATION made steady progress in 1953. What may be considered as Phase One of the initial research program was brought near to completion, and new, broad plans were formulated for the extension of the Foundation's activities in formal education and in general public understanding.

Three research projects begun in former years were brought to conclusion in the form of commercially published books, and two more were almost ready to go to press at the year's end. All these studies provide facts and evaluate their importance in relation to a given problem or aspect of resource use. Each presents the general reader with knowledge hitherto not readily available and provides the specialist with clues suggesting appropriate action, or, in some instances, pointing the way to further research needs.

Phase Two of the Foundation's research activities concerns the application of these studies to areas where they will render the greatest public good. There must be an all-out effort to establish these publications as working manuals rather than as dust-catching reference books.

Completed during the year or now in press are the following:
Conservation Law and Administration. By William F. Schulz, Jr., Professor of Law, University of Pittsburgh, School of Law. Foreword by Fairfield Osborn. Published by the Ronald Press Company, 1953. A study presenting the full scope of conservation problems in the State of Pennsylvania. It provides a critical analysis of present state and federal laws in that commonwealth, together with an examination of the practices of the agencies in charge of their administration, and the tradition and precedent on which they are presently applied. The end product of this unique study takes the form of a Model Conservation Administration Act.

Wildlife in Alaska. By Professor A. Starker Leopold, the University of California; and Dr. F. Fraser Darling, noted Scottish ecologist. Foreword by Fairfield Osborn. Produced under the joint sponsorship of the New York Zoological Society and the Conservation Foundation. Published by the Ronald Press Company, 1953. This book, based on extensive field studies made by the authors in 1952, examines the possibilities of Alaskan conservation with particular reference to the economic values of the Territory's wildlife - notably the caribou, reindeer and moose populations. The authors analyze the impact of human settlement on wildlife habitats and the potential position of the great wild mammals in the economy of the Territory. The book also outlines work to be done to secure sound management of these resources for the continuing welfare of Alaskans.

Vegetation and Watershed Management. By Dr. E.A. Colman, California Forest and Range Experiment Station. Foreword by Fairfield Osborn. Published by the Ronald Press Company, 1953. This presents water as a product of the land and develops the thesis that the prosperity of any land area can change with the character of its vegetation management which affects water supply, flood control and soil erosion. The author analyses the

significant experimental work on vegetation management both here and abroad as it relates to water control. He discusses the problems involved as they relate regionally to such adverse factors as floods, stream flow variations, erosion and sedimentation, suggests fields for further study and treats of the economic and other factors applying to vegetation management practices.

The Flood Control Controversy: Big Dams, Little Dams and Land Management. By Dr. Luna B. Leopold and Thomas Maddock, Jr. Foreword by Fairfield Osborn. Scheduled for May publication by the Ronald Press Company. This book is based on much first-hand discussion with field technicians working over a wide territory, and thus presents for the first time a critical analysis of the issues involved in this highly controversial matter - one of direct interest to all tax-payers and land owners. Available flood control techniques are evaluated as well as the past and current work of the principal federal agencies engaged in solving flood problems. The authors discuss the key issues of the controversy in a way which should make the book of value to both layman and technician.

Fresh Water From the Ocean: For Cities, Industry and Irrigation. By Dr. Cecil B. Ellis and members of Nuclear Development Associates. Foreword by Fairfield Osborn. To be published by the Ronald Press Company, January, 1954. A systematic examination of the fundamental physics underlying the saltwater conversion problem. The book is designed to stimulate further research to identify technical and economic barriers to large-scale use of purified sea water. This timely publication is written in terms easily understood by the general reader, and presents an analysis of the factors entering into the construction of a hypothetical plant of 1,000 million gallons daily capacity - enough water for New York City - construction, maintenance, labor and materials costs, and power requirements. The authors report that sea water cannot now be converted and transported in quantity at prices competitive with current supplies, but they point to areas in which future research might bring a fruitful solution.

CONTINUING PROJECTS - At the close of 1953 the following projects were nearing completion, with publication dates to be announced shortly:

The Soil Erosion Survey of the Western Hemisphere - This study is now in manuscript form and erosion maps of the New World countries are ready for the printer. Publication of the Latin American data is scheduled during 1954. This work should be of value in furthering agricultural rehabilitation and improvement projects throughout the Americas, and will be especially useful in those Latin American countries where food production is steadily outpaced by rapidly growing populations.

This project has been carried on for several years in collaboration with the Food and Agriculture Organization of the United Nations.

The Marine Resources Project, under the direction of Dr. Lionel A. Walford, Chief of the Fishery Biology Branch, U.S. Fish and Wildlife Service, was amplified during 1953 by the contributions of several specialists in the disciplines bearing upon this hitherto inadequately explored field of research. Completion of the project is expected during 1954.

Population vs. Resources - Studies of population pressures in relation to resource problems became a Foundation research area in 1952 under the direction of Dr. Kingsley Davis, Department of Sociology, Columbia University, and in 1953 the Foundation's first two efforts in this important program were completed and two new ones begun.

Dr. Davis's first concern was to determine the fields of population study most useful and appropriate for further investigation. A year's work on this phase of the overall project has resulted in a series of recommendations projecting our population studies several years into the future. Our second project, dealing with the physiological aspects of fertility control, directed by a committee of scientists, was completed in 1953, and the results were reported to a limited group of medical men and interested foundations.

Absence of information on parts of these problems has led us to undertake yet another preliminary investigation of the social psychology and comparative sociology of the people of Jamaica as they relate to reproduction. A small group under the immediate direction of Dr. J. Mayone Stycos, with Dr. Davis as advisor, initiated this work in November, 1953.

A related study has been begun in our office under the direction of Mr. G.W. Roberts, a West Indian on the staff of the Development and Welfare Organization in Barbados. He is making a statistical analysis of the relationships between population, resources and living standards in Jamaica.

EDUCATION - Obviously the results of the Conservation Foundation's research in published form will be of use in courses at universities with which this organization has been directly identified, such as those at Yale and at the Harvard School of Public Administration, as well as in conservation courses in other colleges and universities.

The educational films produced by the Foundation are now seen annually by more than 3,000,000 school and college students. The Boy Scouts of America have recently adopted a national conservation program - an evidence of the value of promoting conservation with such organizations, since we have been in close contact with the Scouts for several years. The Foundation has continued contact with a number of voluntary groups - watershed, garden and other civic associations. The success of these undertakings leads to the conclusion that we are now ready to make a far more consistent, broad and telling assault on public consciousness.

At the college level the Foundation plans to make a complete survey of conservation teaching wherever it is now employed, and also to conduct a study of career opportunities in conservation and the necessary qualifications of graduates for existing jobs. This work would be the province of a scholar-catalyzer added to the staff for this purpose.

At the secondary level of instruction an obvious first step is that of publishing the report of the Plymouth, New Hampshire, Teacher Training Course in conservation, conducted during the summer of 1951. In published form and in the hands of school board members and high school principals throughout the United States, the report should aid significantly in stimulating conservation teaching in secondary schools.

At the primary level our new short teaching films will provide, we hope, a means by which youngsters will be introduced

provocatively to the conservation ethic. These will be released in the coming year.

During 1953 members of the Foundation staff attended meetings and conventions held under the auspices of the organizations listed below.

American Forest Products Industries
American Forestry Association
American Society for the Study of Sterility
Association of American Geographers
Boy Scouts of America
Conservation Education Association
Garden Club of America
Hartford Service Bureau for Women's Organizations
International Fertility Association
London Population Conference
Michigan Department of Conservation
National Association of Biology Teachers
National Association of Manufacturers
National Association of Soil Conservation Districts
National Wildlife Federation
Natural Resources Council of America
New York State Temporary Commission on the Use of Television
for Educational Purposes
Recreation, Conservation and Park Council of Pittsburgh
Resources for the Future, Inc.
Soil Conservation Society of America
The Associates of the Woods Hole Oceanographic Institution
U.S. Department of the Interior, Advisory Committee on
Conservation
University of Michigan, School of Natural Resources and
Extension Service
Wildlife Management Institute

The more important committees on which various members of the Foundation staff have served were:

American Water Works Association, Industrial Water Use
Committee
Garden Club of America, Advisor on Conservation Committee
National Association of Biology Teachers, Committee on
Conservation
National Association of Manufacturers, Committee on Conserva-
tion of Renewable Natural Resources
National Parks Association, Board of Trustees
National Resources Council of America, Chairman
Resources for the Future, Inc., Board of Directors
Soil Conservation Society of America, Business and Organiza-
tion Relations Committee; Technical Standards Committee
U.S. Department of the Interior, Advisory Committee on Con-
servation.

JACKSON HOLE BIOLOGICAL RESEARCH STATION
of the
NEW YORK ZOOLOGICAL SOCIETY
and the
UNIVERSITY OF WYOMING

L. Floyd Clarke, Curator

IN JULY of 1953 arrangements were completed for the joint operation of the Jackson Hole Biological Research Station by the University of Wyoming and the New York Zoological Society. Mr. L. Floyd Clarke was appointed curator. This change in organization follows the successful operation of the Research Station since 1947 by the New York Zoological Society in cooperation with the Jackson Hole Preserve, Inc., and the Wyoming Game and Fish Commission. During the 1953 season the research activity was somewhat less than during previous years. This was because the new arrangements for operation of the station could not be completed early enough to allow for the complete utilization of research facilities. Much of the time and energy during 1953 was devoted to making plans for operation in 1954, and subsequent seasons, on a sound, effective basis. These plans are now substantially complete and we are expecting an outstanding summer of activity in 1954.

Throughout the summer of 1953 Dr. Margaret Altmann continued her very fine research work on elk behavior and Mr. James Opsahl continued his ecology studies of rodents. Institutional representatives spent short periods of time on research projects at the station. These included workers from the University of Idaho, University of Michigan and University of Wyoming.

General improvements were made in the facilities. Two buildings were moved onto the Research Station, one from the Grinnacy place and one from the Park Service Canyon Station. A complete inventory was taken of all Research Station buildings and equipment. Plans were initiated for electrification under REA. Mr. Clarke visited with Mr. John Tee-Van and other officers of the New York Zoological Society to formulate plans for station operation. A publication describing the facilities and opportunities for research has been prepared for distribution to interested institutions and individuals.

The basic policies established by the New York Zoological Society for the operation of the Biological Research Station will be maintained. Projects in basic ecology, taxonomy, behavior and any other field in which the Jackson Hole area furnishes opportunity for substantial and significant research will be encouraged. Opportunities for research in the practical aspects of conservation, game management and fisheries biology are also available. Research work will be permitted in any field of biological science.

TREASURER' S REPORTS

For the Year Ended December 31, 1953

David H. McAlpin, Treasurer
30 East 40th Street
New York 16, N.Y.

NEW YORK ZOOLOGICAL SOCIETY

BALANCE SHEET

December 31, 1953Assets

Cash in banks and on hand		\$ 124,389.94
Investments (approximate market value \$6,494,500)		5,498,204.76
Receivable from the City of New York:		
Appropriations for Zoological Park main-		
tenance - calendar year 1953	\$ 678,303.06	
Less amount received	<u>575,159.19</u>	103,143.87
Other receivables		2,873.02
Park facilities' inventories		28,869.40
Construction projects (jointly with the City of New York):		
In progress	8,487.50	
Unencumbered balances	<u>15,866.39</u>	24,353.89
Park facilities' assets, less depreciation (note 1):		
Improvements to land and buildings in		
Zoological Park	209,599.67	
Equipment and miscellaneous items	<u>77,999.88</u>	287,599.55
Prepaid expenses and deferred charges		9,246.82
National collection of heads and horns, art		
gallery, library and sundry items		1.00
Collection of living animals		1.00
Jackson Hole research station buildings and		
equipment		1.00
Simla tropical research station		<u>1.00</u>
		6,078,685.25
Aquarium fund assets, per contra (note 4):		
Cash	5,759.15	
Investments (approximate market value \$191,000)	195,351.15	
Deposit with City of New York	<u>33,160.00</u>	
		<u>734,270.30</u>
		\$ <u>6,312,955.55</u>

Liabilities

Accounts payable and accrued expenses		\$ 88,233.23
Fund reserves		
General Funds	\$ 4,235,207.55	
Endowment Funds	1,169,697.41	
Special Purpose Funds	250,898.82	
Reserve for Educational and Other Purposes	20,734.78	
Park Facilities' Operating Fund	<u>313,913.46</u>	
		5,990,452.02
		6,078,685.25
Aquarium Fund, per contra (note 4):		
Account payable	2,000.00	
Reserve	<u>232,270.30</u>	
		234,270.30
		\$ <u>6,312,955.55</u>

Notes:

- (1) Park facilities' assets are subject to an agreement with the City of New York and the net income from park facilities' operations may be used only for the purchase of animals and the improvement of Zoological Park.
- (2) This balance sheet does not include the assets and liabilities of The Pension Fund.
- (3) Except for income from investments which is accounted for in the year received, this balance sheet is prepared on an accrual basis.
- (4) The New York Zoological Society and the City of New York have entered into an agreement for the purpose of constructing an aquarium, as funds become available, at an estimated total cost of \$7,100,000 to be shared equally by both parties. It is anticipated that the Society's portion of the cost of the first unit to be met within the next calendar year will be approximately \$500,000.

FUND RESERVES

December 31, 1953

General:

General Working Fund	\$	15,190.92	
Anna M. Harkness Fund		1,035,335.18	
Sage Fund		642,676.51	
Mary Clark Thompson Fund		<u>2,542,004.94</u>	
		<u>4,235,207.55</u>	

Endowment:

George F. Baker Fund	\$	108,987.31	
Mary Thurston Cockroft Fund		29,173.20	
Robert Jaffray Fund		13,703.18	
William Pyle Philips Fund		10,242.45	
Rockefeller Fund		<u>1,007,591.27</u>	1,169,697.41

Special Purpose:

Cadwalader Animal Fund		19,870.66	
Conservation Account		23,973.08	
Damon Fund		16,241.01	
Grant Fund for the Protection of Wildlife		24,638.40	
Laurance S. Rockefeller Fund		25,815.57	
Jacob H. Schiff Fund		106,450.87	
Stokes Bird Fund		5,000.81	
Miscellaneous		<u>28,908.42</u>	250,898.82

Reserve for Educational and Other Purposes
Park Facilities' Operating Fund

20,734.78

313,913.465,990,452.02

Aquarium Fund

232,270.30\$ 6,222,722.32

Note: Park facilities' assets are subject to an agreement with the City of New York, and the net income from park facilities' operations may be used only for the purchase of animals and the improvement of Zoological Park.

PERMANENT WILD LIFE PROTECTION FUND

Cash	\$	282.60
Investments (approximate market value \$159,200.00)		<u>131,004.26</u>
Amount of Fund at December 31, 1953	\$	<u>131,286.86</u>

SUMMARY OF CHANGES IN FUND RESERVES

Year ended December 31, 1953

General Funds

Balance at December 31, 1952		\$ 4,373,154.28
Receipts		<u>98,560.90</u>
		4,471,715.18
Expenditures	\$ 234,007.63	
Transfer to Special Purpose Funds	<u>2,500.00</u>	
		<u>236,507.63</u>
Balance at December 31, 1953		\$ <u>4,235,207.55</u>

Endowment Funds

Balance at December 31, 1952		1,155,025.00
Receipts		<u>14,672.41</u>
Balance at December 31, 1953		\$ <u>1,169,697.41</u>

Special Purpose Funds

Balance at December 31, 1952		344,673.28
Receipts	84,195.06	
Transfers	<u>40,500.00</u>	
		<u>124,695.06</u>
		469,368.34
Expenditures	118,469.52	
Transfer to Aquarium Fund	<u>100,000.00</u>	
		<u>218,469.52</u>
Balance at December 31, 1953		\$ <u>250,898.82</u>

Reserve for Educational and Other Purposes

Balance at December 31, 1952		33,686.62
Appropriation		<u>10,000.00</u>
		43,686.62
Expenditures		<u>22,951.84</u>
Balance at December 31, 1953		\$ <u>20,734.78</u>

Aquarium Fund

Balance at December 31, 1952		18,959.25
Receipts	122,434.72	
Transfer from Special Purpose Funds	<u>100,000.00</u>	
		<u>222,434.72</u>
		241,393.97
Expenditures		<u>9,123.67</u>
Balance at December 31, 1953		\$ <u>232,270.30</u>

GENERAL WORKING FUND

Year ended December 31, 1953

Balance at December 31, 1952		\$ 97,452.26
Add:		
Gifts, grants and legacies	\$ 29,089.37	
Life memberships	1,130.00	
Conservation film royalties	9,752.13	
Pro-rata share of net profit on sales and redemption of investments	1,237.90	
Transfers from other general funds:		
Mary Clark Thompson Fund	\$ 66,000.00	
Anna M. Harkness Fund	27,500.00	
Sage Fund	<u>16,500.00</u>	110,000.00
Balance from general income account		
	<u>3,036.89</u>	<u>154,246.29</u>
		251,698.55
Deduct:		
Payments on account of appropriation for remodeling the reptile house	194,312.96	
Appropriation for fund raising and membership promotion expenses	10,000.00	
Payment on account of appropriation for operating costs of Department of Tropical Research at Simla, Trinidad, B.W.I., for the year ended April 30, 1954	8,000.00	
Payment for consulting services and supervision of the Society's Conservation Film Program and of the Zoological Park's Film Program for the year ended December 31, 1953	6,600.00	
Grant to Woods Hole Marine Biological Laboratory	4,000.00	
Payment on account of grant for the production of publications on the care and exhibition of wild animals in captivity	3,500.00	
Payments on account of appropriations for operating expenses and research at Jackson Hole Research Station	4,000.00	
Payments for publications and motion picture film production	5,272.95	
Miscellaneous charges	<u>821.72</u>	
		<u>236,507.63</u>
Balance at December 31, 1953		\$ <u>15,190.92</u>

GENERAL INCOME ACCOUNT

Year ended December 31, 1953

Income:

Income from investments	\$ 286,179.74
Annual dues	45,070.00
Sales of publications	4,829.12
Miscellaneous income	<u>9,420.94</u>

Total income	\$ <u>345,499.80</u>
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Expenses:

Actuarial fee	1,203.52
Annual report	2,301.00
Aquarium research	5,242.94
Art gallery	19.06
Audit fee	2,100.00
Conservation	25,000.00
Custodian fees	3,023.00
Donations	52.14
Educational activities	11,634.22
Employee welfare	3,223.66
Executive office	19,451.25
Group life insurance	5,368.77
Insurance	9,744.63
Legal fees	2,724.39
Library	796.59
Members - meetings and services	16,826.45
Membership promotion and fund raising	13,247.51

Pensions:

Fund contribution - 150% of employee contributions	\$ 21,806.69	
Auxiliary payments	<u>6,424.44</u>	28,231.13
Photography - salaries and supplies		8,651.50
Publication expenses:		
Salaries and other expenses	17,961.39	
"Animal Kingdom"	13,187.51	
"Zoologica"	<u>7,240.22</u>	38,389.12
Reception expense		1,062.97
Social security taxes		826.25
Traveling expense		6,526.26
Tropical research		12,724.11
Miscellaneous expense		<u>2,005.29</u>
		220,375.76

Appropriation for reserve for educational and other purposes	10,000.00
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Park maintenance expenditures for the year 1953	790,390.21
Less amount provided by New York City	<u>678,303.06</u>

Amount expended by New York Zoological Society	112,087.15
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Balance carried to General Working Fund	<u>3,036.89</u>
	\$ <u>345,499.80</u>

Note: Except for income from investments which is accounted for in the year received, this statement is prepared on an accrual basis.

PARK FACILITIES

Statement of Income and Expense and Operating Fund

Year ended December 31, 1953

Balance of Park Facilities Operating Fund at December 31, 1952		\$ 238,740.56
Add:		
Receipts from sales at restaurants, stands, etc. and from services	\$ 962,581.82	
Less:		
Cost of merchandise sold	\$ 293,278.89	
Salaries and commissions	377,882.55	
Operating and maintenance supplies	100,000.87	
Depreciation	21,850.62	
Comprehensive public liability insurance	29,998.34	
Other operating and general expenses	<u>26,397.65</u>	<u>849,408.92</u>
Net income from sales at restaurants, stands, etc. and from services (see note)		<u>113,172.90</u>
		351,913.46
Deduct:		
Appropriations for park improvements	25,000.00	
Appropriations for the purchase of animals	<u>13,000.00</u>	
		<u>38,000.00</u>
Balance of Park Facilities Operating Fund at December 31, 1953		\$ <u>313,913.46</u>

Note: Park facilities assets are subject to an agreement with the City of New York, and the net income from park facilities operations may be used only for the purchase of animals and the improvement of Zoological Park.

GIFTS AND GRANTS RECEIVED

Year ended December 31, 1953

General Fund:

Cornelius R. Agnew	\$	5,120.00
Anonymous		1,000.00
George F. Baker, Jr.		1,000.00
Estate of Elisabeth B. Brundige		500.00
Estate of Ina T. Campbell		5,000.00
C. Snyder Cutting		1,500.00
Childs Frick		5,400.00
John H. Phipps		2,700.00
Estate of Sarah E. Roache		3,368.37
Rockefeller Brothers Fund		2,500.00
Mrs. John Jay Whitehead		<u>1,000.00</u>
		29,088.37

Dr. William Beebe - Gift of lands and buildings constituting research station at Trinidad, B.W.I., known as "Simla" - recorded at nominal amount

1.00
29,089.37

American Committee for International Wildlife Protection:

Childs Frick 5,400.00

Blickman Film Fund:

Saul Blickman 8,200.00

Cancer Research:

National Cancer Institute 17,200.00

Conservation Foundation:

Childs Frick 5,400.00

Aquarium Fund:

Percy Chubb II	\$	4,954.40	
John Elliott		100.00	
Childs Frick		13,500.00	
Miss Anne Phipps		500.00	
Laurance S. Rockefeller		87,719.94	
The Schiff Foundation		5,000.00	
The Thorne Foundation		10,000.00	
Others (3)		<u>18.00</u>	121,792.34

Special Fund for Construction of Animal Nursery:

Mrs. Nathan Hayward, Jr. 3,000.00

Carried forward \$ 190,081.71

GIFTS AND GRANTS RECEIVED (Continued)

Brought forward		\$ 190,081.71
Special Projects:		
The Corporation Trust Company	\$	250.00
Dr. Richard B. Dominick		25.00
Dr. H. Clay Frick		300.00
Mrs. Ruth Hill Heidsieck		74.00
Gilbert W. Kahn		200.00
The Lyric Foundation - In memory of Mrs. Virginia Kent Cummins		25.00
Parents Magazine		25.00
Hubert E. & Anne Rogers Foundation, Inc.		100.00
Rotary Club of Scranton		50.00
The Scherman Foundation		250.00
John Tee-Van		250.00
Joseph A. Thomas		50.00
Time, Incorporated		250.00
Mrs. M. Brown Trimble		30.00
Philip W. Wrenn, Jr.		25.00
Ernest W. Wyckoff		27.50
Others (29)		<u>148.00</u>
		2,079.50
For animal nursery repairs:		
Mrs. Nathan Hayward, Jr.		500.00
For laboratory expenses:		
American Cancer Society		250.00
For transportation of Roosevelt elk to Zoological Park:		
De Forest Grant		1,500.00
For Department of Tropical Research:		
Anonymous	\$	225.00
Mrs. Wilbur G. Downs		50.00
Warren Kinney		50.00
Dr. A. P. McCombs		<u>150.00</u>
		<u>475.00</u>
		4,804.50
	\$	<u><u>194,886.21</u></u>

THE PENSION FUND
(Founded by Andrew Carnegie)

Statement of Cash Transactions

Year ended December 31, 1953

Balance at December 31, 1952:

Investments (approximate market value

\$1,089,000.00)

\$ 941,819.22

Uninvested balance of cash

27,087.60

968,906.82

Receipts:

Income from investments:

Interest

\$ 13,680.02

Dividends

28,877.55

42,557.57

Contributions by employees

17,467.77

Contributions by New York

Zoological Society (150% of
contributions by employees):

Society

\$ 21,658.82

Facilities

4,542.94

26,201.76

Special contributions with
respect to permanent employees
over 45 years of age:

Contribution by employee

131.29

Contribution by New York

Zoological Society

20.99

152.28

Special contributions with
respect to former temporary
employees admitted to the
Pension Fund:

Contribution by employee

77.10

Contribution by New York

Zoological Society

115.65

192.75

Special contributions with
respect to employees returned
from the armed forces:

Contribution by employee

64.83

Contribution by New York

Zoological Society

97.25

162.08

Interest on special contributions

12.35

86,746.56

Expenditures:

Refunds on account of resignations

\$ 2,303.38

Refunds to heirs of deceased employees

457.09

Refunds to heirs of deceased pensioners

2,967.12

Pension disbursements

28,029.51

33,757.10

1,021,896.28

Profit on sale of investments (Schedule 2)

2,923.17

Balance at December 31, 1953:

Investments (approximate market value

\$1,154,900.00)

1,018,317.88

Accrued interest purchased

13.33

Uninvested balance of cash

6,488.24

\$ 1,024,819.45

PEAT, MARWICK, MITCHELL & CO.

CERTIFIED PUBLIC ACCOUNTANTS

SEVENTY PINE STREET

NEW YORK 5, N.Y.

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ACCOUNTANTS' REPORT

The Board of Trustees
New York Zoological Society
New York, N. Y.

We have examined the balance sheet of the New York Zoological Society as of December 31, 1953 and statements of the transactions of the various funds of the Society and of The Pension Fund for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

We made a test-check of the subscriptions, donations and dues reported as received and of the income from investments, and found such items to be properly recorded. The securities recorded in the various funds were in agreement with schedules and other supplementary data prepared by the custodians of such securities held for the account of the Society. Bank balances were confirmed directly to us by the depositaries and were reconciled with the respective cash balances recorded in the accounts. We examined approved vouchers and paid checks for a number of representative expenditures.

Park facilities' assets are carried in the accounts at net depreciated book amounts as of December 31, 1940 plus subsequent additions at cost, less retirements. Provision for depreciation from January 1, 1941 to December 31, 1953 has been computed on the resulting book balances.

In our opinion, subject to the comments contained in the previous paragraph, the accompanying balance sheet and statements of transactions of the various funds of the Society present fairly the financial position of the Society at December 31, 1953 on the basis stated therein, and the changes in the funds of the Society for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

New York, N. Y.
March 1, 1954

Peat, Marwick, Mitchell & Co.

REPORT OF THE AUDITING COMMITTEE
OF THE
NEW YORK ZOOLOGICAL SOCIETY

To the President and Board of Trustees
of the New York Zoological Society

Dear Sirs:

We have examined the reports of Peat, Marwick, Mitchell & Company, on their examination of the accounts of the New York Zoological Society, the Permanent Wild Life Protection Fund, and the Pension Fund of the Society for the year ended December 31, 1953. These reports indicate that the records of the Society have been examined in accordance with generally accepted auditing standards, and certify that the accounts of the Society, as set forth on the balance sheet and statements of various funds, present fairly the financial position of the Society as of December 31, 1953.

These reports also indicate that test checks have been made of the subscriptions, donations, dues and income from investment; that the securities recorded in the various funds were in agreement with the schedules and other supplementary data prepared by the custodians; and that bank balances have been confirmed by the depositaries.

We accordingly submit Messrs. Peat, Marwick, Mitchell & Company's reports to you as a satisfactory audit of the accounts of the Society, including the Fund Reserves, General Income Account and the Facilities Account.

Respectfully submitted,

Percy Chubb, II
J. Watson Webb
William DeForest Manice

March 30, 1954

SUMMARY OF EXPENDITURES, 1896 to 1953, New York Zoological Society and the City of New York, on Account of the Development and Maintenance of the Zoological Park and the Aquarium, Including the Purchase of Collections and Also for the Scientific and General Purposes of This Society.

Year	EXPENDED BY THE CITY OF NEW YORK			FROM GATE RECEIPTS		EXPENDED BY THE NEW YORK ZOOLOGICAL SOCIETY									
	Zoological Park Maintenance	Aquarium Maintenance	Bond Issues a/c Park & Aquarium	Construction and Repairs	Purchase of Animals	Zoological Park Development	Aquarium Improvements	Zoological Park Maintenance	Aquarium Maintenance	Purchase of Animals	Aquarium Specimens	Heads and Horns Collection	Pension Fund Contribution	Library and Paintings	Scientific and General Purposes
1896	.....	.....	.....	.....	.....	\$ 4,213.63	.....	.....	.....	.....	.....	.....	.....	.....	.....
1897	.....	.....	.....	.....	.....	6,424.61	.....	.....	.....	.....	.....	.....	.....	.....	.....
1898	.....	.....	.....	.....	.....	23,597.80	.....	\$ 1,292.16	.....	.....	.....	.....	.....	.....	\$ 2,903.74
1899	\$ 30,000.00	.....	.....	.....	.....	145,495.80	.....	7,038.61	.....	\$ 8,540.72	.....	.....	.....	.....	4,339.20
1900	40,000.00	.....	\$125,000.00	.....	\$ 2,470.88	34,626.24	.....	6,189.33	.....	3,784.32	.....	.....	.....	\$ 102.76	3,476.02
1901	65,000.00	.....	300,000.00	.....	2,998.80	18,348.61	.....	3,714.37	.....	11,652.24	.....	.....	.....	462.20	7,597.16
1902	85,000.00	\$ 5,959.97	250,000.00	.....	4,256.50	5,908.69	.....	2,757.57	.....	20,983.07	.....	.....	.....	224.73	11,068.69
1903	104,965.00	46,453.68	280,000.00	.....	5,912.95	1,038.20	.....	.....	.....	20,361.62	.....	.....	.....	456.03	13,608.10
1904	104,965.00	46,439.72	315,000.00	.....	5,421.90	1,013.87	.....	1,894.37	.....	14,299.61	.....	.....	.....	887.16	15,072.84
1905	134,965.00	44,968.50	275,000.00	.....	6,849.00	144.00	.....	.....	.....	20,643.40	.....	.....	.....	418.10	18,773.90
1906	144,965.00	44,987.71	250,000.00	.....	8,132.35	778.48	.....	.....	.....	14,907.36	.....	.....	.....	319.16	17,961.67
1907	141,558.75	44,183.87	100,000.00	.....	8,248.65	370.72	.....	.....	.....	10,606.03	.....	\$ 892.71	.....	644.05	15,999.68
1908	154,627.00	44,157.27	65,000.00	.....	9,446.40	232.27	.....	.....	.....	4,231.61	.....	735.77	.....	1,313.87	14,693.92
1909	162,325.00	45,971.44	10,000.00	.....	9,992.75	2,860.92	.....	.....	.....	9,734.43	.....	7,340.82	.....	609.56	17,168.95
1910	167,632.00	45,974.86	89,500.00	.....	9,909.90	5,918.35	.....	.....	.....	4,339.25	\$ 973.90	2,036.39	.....	1,021.87	20,627.77
1911	174,632.00	47,560.21	155,000.00	.....	11,611.15	1,155.00	.....	.....	.....	6,659.89	1,191.80	1,615.38	.....	1,221.26	23,409.39
1912	182,365.00	46,597.08	.....	.....	11,838.40	40.00	.....	.....	.....	22,750.18	1,350.03	556.94	.....	1,031.55	32,109.01
1913	191,925.00	47,335.62	29,100.00	.....	12,404.25	218.45	.....	.....	.....	10,665.57	1,850.25	486.00	.....	732.97	32,543.88
1914	200,000.00	46,995.53	.....	\$ 9,237.81	3,831.15	2,175.13	.....	.....	.....	22,590.44	1,792.99	338.73	\$3,333.33	3,541.15	28,246.42
1915	200,000.00	46,991.66	21,425.00	.....	9,175.86	887.88	.....	.....	.....	13,629.41	1,466.64	1,024.91	8,000.00	4,181.24	31,398.08
1916	197,074.35	46,996.43	.....	9,599.81	.....	425.30	.....	.....	.....	13,511.12	2,193.57	1,031.47	8,000.00	1,555.12	38,339.99
1917	199,560.00	46,903.61	.....	3,488.31	7,118.90	1,450.05	.....	11,537.79	.....	10,175.70	1,637.15	18.12	8,000.00	2,869.20	44,262.48
1918	207,586.00	48,630.71	.....	2,642.70	.....	48.12	.....	1,580.00	\$ 93.61	8,425.92	960.19	18.61	8,000.00	3,559.85	34,125.49
1919	190,000.00	45,000.00	5,000.00	4,917.84	.....	.....	\$ 3,450.00	19,924.00	407.07	13,345.59	1,028.03	88.27	8,000.00	1,442.07	45,599.71
1920	250,098.27	53,971.48	15,000.00	17,438.28	.....	5,007.00	4,095.03	5,141.92	.....	32,761.08	1,654.02	263.86	8,000.00	2,517.64	51,018.20
1921	276,951.01	65,203.12	86,000.00	25,463.77	.....	88,734.92	53,635.02	6,068.17	976.47	27,442.59	2,165.05	2,661.67	8,000.00	4,698.24	55,684.15
1922	264,618.05	63,341.26	25,000.00	17,060.00	.....	50,888.65	16,153.03	10,074.88	3,326.28	43,047.41	3,057.91	7,191.93	8,000.00	1,765.78	58,797.69
1923	262,724.50	57,166.63	.....	18,388.20	.....	5,000.00	.....	19,019.09	3,319.44	24,456.20	1,432.89	1,550.69	8,000.00	3,391.96	58,404.21
1924	262,471.01	57,319.20	7,970.00	16,806.00	.....	.....	28,233.45	28,956.34	8,097.14	11,560.62	2,013.83	942.34	8,000.00	1,938.77	76,559.41
1925	262,808.69	58,324.89	85,000.00	19,974.05	.....	.....	.....	38,793.01	4,380.45	20,843.01	2,609.55	667.78	8,000.00	1,174.24	242,753.89
1926	273,815.12	62,266.20	1,500.00	20,102.90	.....	.....	.....	45,467.10	7,261.21	23,460.04	2,847.35	306.32	8,000.00	562.40	87,915.27
1927	276,855.19	65,216.89	.....	18,960.48	.....	.....	1,395.00	61,968.22	11,656.97	27,545.92	2,861.55	135.00	8,000.00	2,477.37	82,807.54
1928	319,380.50	88,109.12	.....	18,106.25	.....	2,480.06	.....	52,676.35	10,776.84	21,001.88	2,912.97	107.89	8,000.00	1,168.15	88,794.37
1929	338,359.00	71,229.35	100,000.00	21,957.80	.....	13,095.54	984.85	59,673.38	13,670.81	23,783.69	3,572.14	669.48	8,000.00	4,029.63	122,774.78
1930	350,170.92	81,343.46	50,000.00	20,834.91	.....	2,500.89	375.00	65,600.39	16,966.30	17,492.92	1,355.56	639.04	10,000.00	2,726.37	134,278.88
1931	349,344.95	76,408.08	.....	14,890.58	.....	5,131.68	.....	65,601.03	19,541.40	24,439.56	3,650.53	1,707.40	10,000.00	6,713.26	128,871.12
1932	337,490.01	76,071.24	.....	16,710.25	.....	1,852.40	.....	61,127.48	19,155.01	20,039.28	1,934.84	335.00	10,000.00	3,607.97	97,303.32
1933	268,833.38	67,814.24	5,422.63	13,961.02	.....	.....	.....	62,996.66	18,120.73	7,644.14	2,199.91	118.65	10,000.00	3,384.38	86,757.06
1934	257,423.08	65,806.61	.....	11,025.88	.....	1,037.19	.....	66,502.59	18,229.23	9,267.86	1,641.06	162.86	10,000.00	606.53	81,711.26
1935	265,630.94	68,203.46	.....	11,596.51	.....	.....	.....	60,237.94	18,832.57	16,530.28	2,031.56	275.21	10,000.00	383.07	82,929.14
1936	265,057.37	68,760.95	.....	13,496.42	.....	100.00	.....	57,270.94	17,886.45	20,918.46	2,867.53	178.43	10,000.00	470.18	79,835.73
1937	267,192.29	73,807.74	.....	11,527.85	.....	.....	.....	56,262.45	16,408.55	22,417.08	2,799.17	24.79	19,047.09	1,415.39	92,609.40
1938	282,759.71	79,225.20	.....	10,235.70	.....	.....	.....	57,043.10	13,408.11	15,351.51	558.82	.....	20,455.95	431.41	93,543.59
1939	283,280.81	79,164.23	.....	11,019.23	.....	.....	.....	51,050.57	12,941.70	23,012.27	403.75	175.00	20,475.95	345.30	92,576.90
1940	282,761.15	78,905.12	.....	8,392.10	.....	102,343.87	.....	57,513.25	12,022.76	39,627.52	577.10	.....	20,069.17	533.85	98,501.05
1941	286,284.59	62,052.95	.....	15,947.33	.....	187,408.02	.....	84,254.19	9,466.70	57,236.77	574.40	.....	18,206.34	1,316.89	100,846.55
1942	258,656.76	50,931.00	.....	10,169.20	.....	43,088.43	.....	49,226.40	4,807.79	8,369.36	553.52	.....	10,762.57	401.65	144,765.21
1943	305,203.23	33,324.31	.....	11,904.80	.....	38,860.03	3,500.00	51,833.51	5,154.21	2,319.36	336.19	.....	9,832.98	574.01	73,192.91
1944	315,787.82	33,790.82	.....	17,316.09	.....	32,101.60	23,420.00	50,691.82	3,717.28	5,106.59	96.48	.....	10,234.06	405.52	88,594.55
1945	334,288.37	38,158.81	.....	20,745.35	.....	58,943.48	225.52	58,846.39	5,928.38	11,466.19	460.34	.....	12,681.89	1,001.92	112,541.29
1946	366,113.74	42,654.03	.....	24,688.34	.....	122,388.48	*34,997.55	62,439.25	6,742.70	43,037.09	172.30	.....	14,238.14	741.14	168,881.41
1947	440,147.60	40,285.04	.....	22,665.64	.....	101,392.80	*19,669.26	85,294.53	8,715.67	71,342.79	687.91	.....	15,751.26	690.03	348,442.82
1948	469,638.83	38,564.40	.....	30,690.08	.....	93,683.84	116.71	83,652.16	9,419.90	26,461.29	470.63	.....	16,708.48	1,004.40	346,222.76
1949	497,900.12	40,189.02	.....	25,400.02	.....	344,122.56	*4,203.50	82,044.22	11,170.76	50,408.80	1,370.90	.....	31,251.50	1,220.17	333,513.75
1950	506,035.90	40,188.48	.....	23,731.77	.....	62,598.22	.....	85,411.22	11,404.61	22,947.59	767.71	.....	35,049.90	970.52	298,458.78
1951	553,918.55	42,774.35	.....	28,913.22	.....	69,747.69	.....	94,063.94	12,966.97	17,934.34	613.19	.....	17,936.21	1,365.34	271,570.10
1952	579,931.76	45,809.54	.....	27,588.02	.....	40,542.32	.....	105,641.48	13,721.06	18,806.08	665.69	.....	18,938.55	1,618.36	335,393.47
1953	632,546.60	45,756.46	.....	27,066.78	.....	218,810.05	*9,123.67	97,757.81	14,329.34	28,470.18	468.74				

NEW YORK ZOOLOGICAL SOCIETY

INCORPORATION of the New York Zoological Society by the State of New York was accomplished under Chapter 435 of the Laws of 1895 and the basic purposes of the Society were embodied in Section 2:

Said corporation shall have power to establish, maintain and control zoological parks, gardens, or other collections for the promotion of zoology and kindred subjects, and for the instruction and recreation of the people. Said corporation may collect, hold and expend funds for zoological research and publication, for the protection of wild animal life, and for kindred purposes, and may promote, form, and co-operate with other associations with similar purposes, and may purchase, sell, or exchange animals, plants, and specimens appropriate to the objects for which it was created.

Subsequently, at a special meeting of the Commissioners of the Sinking Fund, City of New York, held on March 24, 1897, a resolution was passed allotting South Bronx Park for the use of the New York Zoological Society and establishing the terms of a management agreement under which the Society has operated since that date, with only minor modifications.

The resolution of March 24, 1897, and the supplemental agreement of January 24, 1942, provided that the Society should furnish the original equipment of buildings and animals, that it should raise \$250,000 by subscription within three years of the date of starting work on the improvement of the grounds, that the Society should have the right to establish an endowment fund to be used solely for the general uses and purposes of the Society unless otherwise specified by the donors, that the City of New York should provide funds for the maintenance and care of the Zoological Park and for the maintenance of the animal collections, that the Zoological Park should be open to the public free at least four days a week, that the Society may expend the net proceeds of facilities only for the purchase of animals and the improvement of the Zoological Park and that the Society should have the right to make and control all appointments of employees and to fix salaries and make promotions.

NEW YORK ZOOLOGICAL SOCIETY

Organized 1895

Presidents

I. Andrew H. Green	1895 to 1897
II. Levi P. Morton	1897 to 1909
III. Henry Fairfield Osborn	1909 to 1925
IV. Madison Grant	1925 to 1937
V. W. Redmond Cross	1937 to 1940
VI. Fairfield Osborn	1940

First Vice-Presidents

I. J. Hampton Robb	1895 to 1897
II. Henry Fairfield Osborn	1897 to 1909
III. Samuel Thorne	1909 to 1916
IV. Madison Grant	1916 to 1925
V. Frank K. Sturgis	1925 to 1932
VI. W. Redmond Cross	1932 to 1937
VII. Kermit Roosevelt	1937 to 1939
VIII. Alfred Ely	1939

Second Vice-Presidents

I. Charles E. Whitehead	1895 to 1902
II. John L. Cadwalader	1902 to 1915
III. Madison Grant	1915 to 1916
IV. Frank K. Sturgis	1916 to 1925
V. Henry D. Whiton	1925 to 1930
VI. Kermit Roosevelt	1930 to 1937
VII. Alfred Ely	1937 to 1939
VIII. Laurance S. Rockefeller	1939

Treasurers

I. L. V. F. Randolph	1895 to 1901
II. Charles T. Barney	1901 to 1903
III. Percy Rivington Pyne	1903 to 1922
IV. Cornelius R. Agnew	1922 to 1953
V. David H. McAlpin	1953

Secretaries

I. Madison Grant.	1895 to 1925
II. William White Niles.	1925 to 1935
III. Fairfield Osborn	1935 to 1940
IV. Harold J. O'Connell.	1941

Chairmen, Executive Committee

I. Charles E. Whitehead	1895 to 1896
II. Henry Fairfield Osborn	1896 to 1903
III. Charles T. Barney.	1903 to 1907
IV. Henry Fairfield Osborn	1907 to 1909
V. Madison Grant.	1909 to 1937
VI. W. Redmond Cross	1937 to 1940
VII. Laurance S. Rockefeller.	1940 to 1943
VIII. Fairfield Osborn	1943 to 1945
IX. Laurance S. Rockefeller.	1945

Directors

I. William T. Hornaday, Zoological Park.	1896 to 1926
II. Charles H. Townsend, New York Aquarium.	1902 to 1937
III. W. Reid Blair, Zoological Park.	1926 to 1940
IV. Allyn R. Jennings.	1940 to 1941
V. Charles M. Breder, Jr. New York Aquarium.	1937 to 1943
VI. John Tee-Van, Zoological Park.	1952

BOARD OF TRUSTEES

City of New York
Ex-officio

Hon. Robert F. Wagner, The Mayor
Hon. Robert Moses, Commissioner of Parks

Class of 1954

Cornelius R. Agnew
Percy Chubb, 2nd
C. Suydam Cutting
Alfred Ely
Marshall Field
Childs Frick

Henry Clay Frick
Archer M. Huntington
David H. McAlpin
John H. Phipps
Clendenin J. Ryan

Class of 1955

George F. Baker, Jr.
F. Trubee Davison
John Elliott
Robert I. Gannon, S.J.
Peter Grimm
Fairfield Osborn

Eben Pyne
Laurance S. Rockefeller
Archibald B. Roosevelt
John M. Schiff
Edwin S. Webster

Class of 1956

Archibald S. Alexander
Harry Payne Bingham
A. Raymond Dochez
Robert G. Goelet
DeForest Grant
Eugene Holman

Warren Kinney
William DeForest Manice
Harold J. O'Connell
Landon K. Thorne
J. Watson Webb
Ogden White

OFFICERS OF THE SOCIETY

Fairfield Osborn, President

Alfred Ely,
Laurance S. Rockefeller,
Donald T. Carlisle,
Vice-Presidents

Harold J. O'Connell, Secretary

David H. McAlpin, Treasurer

Percy Chubb, 2nd, Assistant Treasurer

General Office:
30 East 40th Street
New York 16, N.Y.

EXECUTIVE COMMITTEE

Laurance S. Rockefeller, Chairman

David H. McAlpin
ex-officio
John Elliott
Alfred Ely
Robert G. Goelet
DeForest Grant
Warren Kinney

Robert Moses,
ex-officio
Harold J. O'Connell,
ex-officio
Fairfield Osborn,
ex-officio

PENSION BOARD

Fairfield Osborn, Chairman

Fred Archer
Christopher W. Coates
Percy Chubb, 2nd
Alfred Ely
Leonard J. Goss

Warren Kinney
David H. McAlpin
Eben Pyne
Herbert F. Schiemann
John Tee-Van

COMMITTEES OF THE SOCIETY

NOMINATING COMMITTEE FOR BOARD OF TRUSTEES

E. Roland Harriman, Chairman
William M. Chadbourne Samuel Thorne

FINANCE COMMITTEE

David H. McAlpin, Chairman
John Elliott
DeForest Grant
Fairfield Osborn,
ex-officio
John M. Schiff

AUDITING COMMITTEE

Percy Chubb, 2nd, Chairman
C. Suydam Cutting
William DeForest Manice
Harold J. O'Connell,
ex-officio
Fairfield Osborn
ex-officio
J. Watson Webb

EDITORIAL COMMITTEE

Fairfield Osborn, Chairman
James W. Atz
William Beebe
William Bridges
Christopher W. Coates
Lee S. Crandall
Leonard J. Goss
James A. Oliver
John Tee-Van

SCIENTIFIC ADVISORY COUNCIL

A. Raymond Dochez
Alfred Emerson
W.A. Hagan
Caryl P. Haskins
K.S. Lashley
John S. Nicholas

HEADS AND HORNS COMMITTEE

Alfred Ely, Chairman
Laurance S. Rockefeller
Samuel B. Webb
F. Carrington Weems

STAFF

John Tee-Van, Director
Leonard J. Goss, Assistant Director

ZOOLOGICAL PARK

Robert M. McClung, Acting Curator, Mammals & Birds
Grace Davall, Assistant Curator, Mammals & Birds
James A. Oliver, Curator, Reptiles
Leonard J. Goss, Veterinarian
Charles P. Gandal, Assistant Veterinarian
Gordon Cuyler, Administrative Assistant
Herbert J. Knobloch, Assistant Curator, Education
John V. Quaranta, Research Associate, Animal Behavior
Quentin Melling Schubert,
Superintendent, Construction & Maintenance
Edward Kearney, Manager, Facilities Department

Lee S. Crandall, General Curator Emeritus
William Beebe, Honorary Curator, Birds

AQUARIUM

Christopher W. Coates, Curator & Aquarist
James W. Atz, Assistant Curator
Ross F. Nigrelli, Pathologist
Myron Gordon, Geneticist
C.M. Breder, Jr., Research Associate in Ichthyology
Homer W. Smith, Research Associate in Physiology

DEPARTMENT OF TROPICAL RESEARCH

William Beebe, Director Emeritus

Jocelyn Crane, Assistant Director
Henry Fleming, Entomologist
William K. Gregory, Associate
John Tee-Van, Associate

GENERAL

Herbert F. Schiemann, Comptroller
William Bridges, Editor & Curator, Publications
Dorothy Reville, Editorial Assistant
Sam Dunton, Photographer

AFFILIATES

CONSERVATION FOUNDATION

President
Fairfield Osborn

Executive Vice-president
Samuel H. Ordway, Jr.

Vice-presidents
George E. Brewer, Jr.
Donald T. Carlisle

A. William Smith
Robert G. Snider

Staff
Stephen W. Bergen
John C. Gibbs

Hugh J. Ross
Peter M. Stern

JACKSON HOLE BIOLOGICAL RESEARCH STATION
OF THE NEW YORK ZOOLOGICAL SOCIETY AND
THE UNIVERSITY OF WYOMING

Curator
L. Floyd Clarke

BY-LAWS OF THE NEW YORK ZOOLOGICAL SOCIETY

ARTICLE I • MEMBERS

SECTION 1. The present members and such others as hereafter shall become members in accordance with these by-laws shall be the members of this Society.

SEC. 2. Annual, contributing and school members shall be elected by the Board or Executive Committee and, upon election, shall qualify for such membership by payment of dues for the first year commencing on the date of their election. No organizations other than schools shall be eligible as such for Society membership.

SEC. 3. Annual dues of annual members shall be \$15, and of contributing and school members \$25. Any person who shall fail to qualify within three months after his election shall be deemed to have declined his election.

SEC. 4. Any member who shall fail to pay his annual dues within three months after notice that they have become due and demand therefor, shall cease to be a member of the Society. He may, however, be reinstated by the Board or Executive Committee for good cause shown.

SEC. 5. Any person who shall have donated to the Society, in the aggregate, cash or the equivalent in value of any of the following amounts shall be eligible for election, by the Board or Executive Committee, to the class of membership appearing opposite such amount:

\$ 300.00	Life Membership	\$ 5,000.00	Founder
\$1,000.00	Patron	\$10,000.00	Founder in Perpetuity
\$2,500.00	Associate Founder	\$25,000.00	Benefactor

An annual member who has paid dues for five consecutive years and a contributing or school member who has paid dues for three consecutive years, may thereafter, at any time, upon payment of the difference between the aggregate dues already paid and \$300, but in no case less than \$100, be elected a Life Member. Upon the death of a trustee, his widow shall be eligible for election, by the Board or Executive Committee, to Life Membership.

SEC. 6. The Board or Executive Committee may elect to membership in the following classes persons who, in their judgment, have achieved the qualifications hereinafter specified:

Fellows:—Persons of marked scientific achievement.

Honorary Members:—Persons who have rendered distinguished services in the science of zoology or natural history.

Corresponding Members:—Persons who have rendered marked services to the Society through correspondence.

SEC. 7. All but annual, contributing and school members shall be exempt from payment of annual dues.

SEC. 8. Benefactors and Founders in Perpetuity shall have the power to designate their respective successors, who shall thereupon be entitled to all the rights and privileges of their predecessors, including the right in turn to design-

nate their successors. Such designation shall be in writing indorsed or attached to the certificate of membership or by last will and testament.

ARTICLE II • PRIVILEGES OF MEMBERS

SECTION 1. Each annual, contributing and school member shall be entitled to a member's ticket, ten tickets of admission to the Zoological Park and Aquarium on pay days, a copy of the annual report, a copy of the official periodical publication of the Society, and shall be entitled also to the privileges of the Library and Administration Building at the Zoological Park.

SEC. 2. Life Members shall be entitled to all the privileges of annual members and also to ten additional tickets of admission to the Zoological Park and Aquarium on pay days.

SEC. 3. Benefactors, Founders in Perpetuity, Founders, Associate Founders and Patrons shall be entitled to all the privileges of Life Members and also to receive the Society's scientific publication "Zoologica."

SEC. 4. A member's ticket, issued annually, shall admit the member and his immediate family to the Zoological Park and Aquarium on pay days and to lectures and special exhibitions. It may be used by the member's immediate family.

SEC. 5. Each member, other than a member elected pursuant to Article I, Section 6, shall be entitled to one vote at each meeting of the Society.

SEC. 6. Any member who shall fail to comply with the provisions of these by-laws may be suspended from the privileges of membership or dropped from the rolls of the Society, by a majority vote of those present at a duly constituted meeting of the Board or Executive Committee.

ARTICLE III • MEETINGS OF THE SOCIETY

SECTION 1. The Annual Meeting of the Society shall be held on the third Tuesday in April in each year, or on such day thereafter and at such time and place as may be designated by the Board or Executive Committee.

SEC. 2. Special Meetings of the Society may be called upon order of the President or Chairman of the Executive Committee or on the written request of ten Trustees delivered to the Secretary.

SEC. 3. Notice of each annual or special meeting of the Society, stating the time, place and purpose thereof, shall be mailed, at least ten days before an annual and three days before a special meeting, to each member at his address last recorded with the Secretary.

SEC. 4. At all meetings of the Society twenty members shall constitute a quorum.

ARTICLE IV • BOARD OF TRUSTEES

SECTION 1. The property, affairs and business of the Society shall be managed and controlled by a Board of Trustees consisting of thirty-six members

divided into three equal classes, together with the Mayor and the Commissioner of Parks of the City of New York who shall be members *ex officio* of the Board. Each class of elected trustees shall hold office for three years and until its successors are elected. The term of office of one class shall expire each year and its successor shall be elected at the annual meeting of the Society.

SEC. 2. No person shall be eligible for election to the Board unless he shall be either a Benefactor, Founder in Perpetuity, Founder, Associate Founder, Patron or Life Member and, excepting to fill vacancies, unless his name shall have been posted as a candidate by the Nominating Committee or by not less than ten members in writing in a conspicuous place in the office of the Society not less than ten days before the annual meeting.

SEC. 3. Vacancies in the Board may be filled for the unexpired term by the Board or Executive Committee at any regular or special meeting, by ballot, by a majority vote of the members present; but no person shall be eligible for election to fill a vacancy unless he shall have been nominated at a prior or special meeting of the Board or Executive Committee.

SEC. 4. The Board shall hold an annual meeting in December in each year, on a date and at a time and place designated by the Board or Executive Committee. Other meetings of the Board may be called upon order of the President or Chairman of the Executive Committee or at the written request of five Trustees delivered to the Secretary. Twelve Trustees shall constitute a quorum.

SEC. 5. Notice of each meeting of the Board shall be mailed to each Trustee at least seven days before the annual meeting and at least three days before any other meeting.

SEC. 6. A Trustee who shall fail to attend three consecutive meetings of the Board, without being excused by the Board, shall be deemed to have resigned as a Trustee.

SEC. 7. The Board at its annual meeting in each year shall appoint three standing committees — an Executive Committee, a Finance Committee and an Auditing Committee — each of which shall serve for one year, or until its successors are appointed. The Board or Executive Committee may appoint such other Committees and delegate to them such powers as they may deem advisable or necessary. The President shall designate the Chairman of each committee.

ARTICLE V • OFFICERS

SECTION 1. The Board of Trustees at its Annual Meeting in each year shall elect a President, a First Vice President, a Second Vice President, a Treasurer and a Secretary from among the Trustees. The said officers shall hold office respectively for the ensuing year and until their successors are elected. Any vacancy for an unexpired term may be filled by the Board or Executive Committee.

SEC. 2. The President shall preside at all meetings of the Society and of the Board, exercise general supervision of the affairs of the Society, from time to time call attention of the Board to such subjects as in his opinion require consideration and shall exercise the usual functions pertaining to his office. He shall be a member *ex officio* of all standing committees.

SEC. 3. The Vice Presidents, in order of seniority, in case of death, absence, resignation or disability of the President shall perform his duties and exercise his powers.

SEC. 4. The Treasurer shall collect, receive and have custody of the funds and securities of the Society subject to the order of the Board or Executive Committee and shall keep all funds of the Society on deposit with a bank or trust company approved by the Board or Executive Committee. He shall pay all bills and appropriations as ordered by the Board or Executive Committee, shall keep regular and correct accounts and shall submit reports to the Society at its Annual Meeting, to the Board at all Regular Meetings and to the Executive Committee at each meeting. He shall be a member *ex officio* of the Executive Committee. The books of account of the Society shall be open at all times to the inspection of the Trustees and the Executive, Finance and Auditing Committees. The fiscal year of the Society shall be the calendar year.

SEC. 5. The Secretary, unless otherwise ordered by the Board or Executive Committee, shall cause notices to be issued of all meetings of the Society, the Board and the Executive Committee, attend all such meetings and keep the minutes thereof. Together with the President or a Vice President he shall execute all contracts and instruments on behalf of the Society, and shall affix the seal of the Society when authorized to do so by the Board or Executive Committee. He shall conduct the correspondence of the Society, have custody of the seal, archives and books, other than books of account, and perform the usual duties pertaining to his office and such other duties as the Board or Executive Committee may direct. He shall be a member *ex officio* of the Executive Committee.

SEC. 6. The Board or Executive Committee may appoint an Assistant Treasurer or an Assistant Secretary and such other officers or officials as may be deemed necessary to serve at the pleasure of the Board or Executive Committee, and may define their respective duties. A bank or trust company organized under the laws of New York and having its principal place of business in New York City may be appointed Assistant Treasurer and may be made depository of the funds and custodian of the securities and investments of the Society upon such terms and with such powers as may be delegated to it by the Board or Executive Committee.

ARTICLE VI • COMMITTEES

SECTION 1. *Executive Committee* — This Committee shall consist of eight Trustees, together with the President, Treasurer and Secretary as members *ex officio*. Vacancies shall be filled by the Board or by the Committee itself.

In the interim between meetings of the Board, the Executive Committee shall manage and control the property, business and affairs of the Society and exercise all the powers of the Board to the extent not delegated to other Committees or contrary to law. It shall report at each regular meeting of the Board.

Regular meetings of the Executive Committee shall be held on the third Tuesday in each month, unless otherwise ordered by the Chairman, at such time and place as shall be fixed by the Chairman. Special meetings may be called upon order of the Chairman or at the written request of three members of the Committee delivered to the Secretary. Four members including the Chairman shall constitute a quorum.

The Executive Committee shall appoint each year a Nominating Committee

which shall hold office for one year and until its successors are appointed.

The Executive Committee shall have power to fix the salaries of the officers and employees of the Society.

SEC. 2. Finance Committee — This Committee shall consist of not less than three Trustees and the Treasurer as members *ex officio*. Vacancies therein shall be filled by the Board or Executive Committee.

The Finance Committee shall have power to sell securities and other investments belonging to the Society and to reinvest proceeds of sale and invest any other funds of the Society available for investment, in such securities or investments as it may deem wise. It shall report quarterly to the Executive Committee all purchases and sales of securities and investments made by it. It may submit to the Board or Executive Committee its recommendations with regard to sales or purchases of securities or other investments.

Notwithstanding the power hereby conferred, the Board or Executive Committee may, at any time, direct the sale of any securities and investments held by the Society, or direct the reinvestment of any proceeds of sale or investment of other funds of the Society available for investment in such securities or investments as it may specify.

All transfers and assignments of the securities registered or standing in the name of the Society shall be executed under the seal of the Society by the President or a Vice President, together with the Secretary or Treasurer.

The report of the Chairman of the Finance Committee shall be sufficient authority to the Chairman of the Executive Committee for approving drafts for purchases of securities or investments.

SEC. 3. Auditing Committee — This Committee shall consist of three members, other than members elected pursuant to Article I, Section 6, together with the President and the Secretary as members *ex officio*. Vacancies therein shall be filled by the Board or Executive Committee.

The Auditing Committee shall cause the accounts of the Treasurer and any other accounts of the Society to be audited and certified annually, or as often as it deems advisable, by a certified public accountant of its selection and shall report to the Board at its annual meeting. It shall cause the annual statement of the Treasurer to be audited and certified by such certified public accountant before it is submitted to the Board, and shall annually, or as often as it deems advisable, examine and verify the securities and other investments belonging to the Society.

SEC. 4. Nominating Committee — This Committee shall be composed of three members other than Trustees and members elected pursuant to Article I, Section 6. Vacancies therein shall be filled by the Executive Committee. This Committee shall select twelve candidates, to succeed the outgoing class of Trustees, to be voted upon at the ensuing annual meeting. Such candidates shall be selected from among the Benefactors, Founders in Perpetuity, Founders, Associate Founders, Patrons and Life Members of the Society. The names of such candidates shall be posted in a conspicuous place in the office of the Society at least ten days before the annual meeting.

ARTICLE VII • AMENDMENTS

SECTION 1. These By-Laws may be amended, either by change or repeal of any provision or the adoption of new provisions, at any meeting of the Board by majority vote of the Trustees present, provided such proposed amendment is set forth in full in the notice of such meeting.





